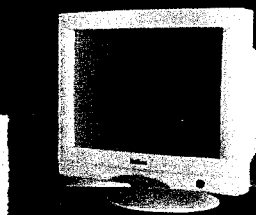


# Belnea



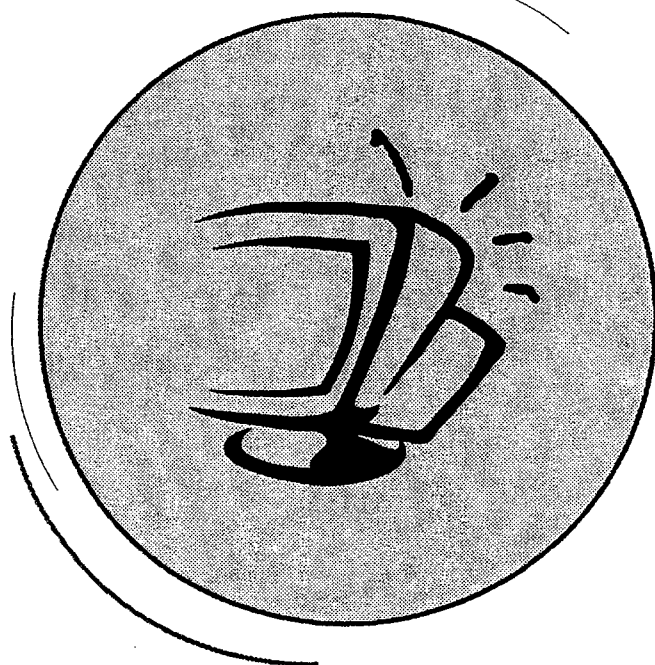
**Belinea**

106055

# Service Manual

**19** Inch (Viewable size 18")

*High Resolution Color Monitor*



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Belinea 106055 Service Manual

First edition December 2001

## **Precautions**

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### **1. Precautions**

Follow these safety, servicing and ESD precautions to prevent damage and to protect against potential hazards such as electrical shock and X-ray exposure.

#### **1-1 Safety Precautions**

##### **1-1-1 Warnings**

1. For continued safety, do not attempt to modify the circuit board.
2. Disconnect the AC power before servicing.
3. With AC power applied, semiconductor heat sinks are potential shock hazards.

##### **1-1-2 Servicing the High Voltage System and CRT**

1. When servicing the high voltage system, remove the static charge by connecting a 10 kohm resistor in series with an insulated wire (such as a test probe) between the chassis and the anode lead.  
(Disconnect the AC line cord from the AC outlet.)
2. Do not lift the CRT by the neck.
3. Handle the CRT only while wearing shatterproof goggles and after completely discharging the high voltage anode.

##### **1-1-3 X-Rays and High Voltage Limits**

1. Keep the high voltage below the specified maximum level. Be sure all service personnel are aware of the procedures and instructions covering X-rays. The only potential source of X-ray in current solid state display monitors is the CRT.  
However, the CRT does not emit measurable X-ray radiation if the high voltage is as specified in the fire and shock hazard instruction. Only when high voltage is excessive are X-rays capable of penetrating the shell of the CRT, including the lead in glass material.
2. It is essential that service technicians have an accurate high voltage meter available at all times. Check the calibration of this meter periodically.

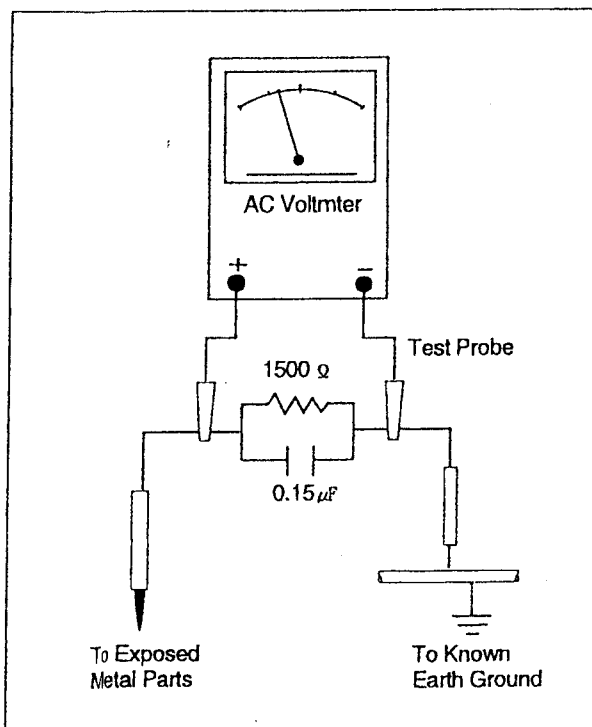
## Precautions

3. High voltage should always be kept at the rated value, no higher. Operation at high voltage may cause failure of the CRT or high voltage circuitry and, under certain conditions, may produce X-rays in excess of acceptable levels.
4. When the high voltage regulator is operating properly, there is no possibility of an X-ray problem. Test the brightness and use a meter to monitor the high voltage each time a color monitor is serviced. Make sure the high voltage does not exceed its specified value and that it is regulating correctly.
5. The CRT is especially designed to prohibit X-ray emissions. To ensure continued X-ray protection, replace the CRT only with one of the same type or an equivalent of the original. Carefully reinstall the CRT shields and mounting hardware; these also provide X-ray protection.
6. When troubleshooting a monitor with excessively high voltage, avoid being unnecessarily close to the monitor. Do not operate the monitor for longer than is necessary to locate the cause of excessive voltage.

### 1-1-4 Fire and Shock Hazard

Before returning the monitor to the user, perform the following safety checks :

1. Inspect each lead dress to make certain that the leads are not pinched or that hardware is not lodged between the chassis and other metal parts inside the monitor.



**Figure 1-1.**  
**Leakage Current Test Circuit**

## Precautions

---

2. Inspect all protective devices such as nonmetallic control knobs, insulating materials, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacitor network mechanical insulators, etc.
3. To be sure that no shock hazard exists, check for leakage current in the following manner.
  - a. Plug the AC line cord directly into a 230 Volt AC outlet.  
(Do not use an isolation transformer for this test)
  - b. Using two clip leads, connect a 1.5k  $\Omega$ , 10 watt resistor paralleled by a 0.15 $\mu$ F capacitor in series with an exposed metal cabinet part and a known earth ground, such as an electrical conduit or electrical ground connected to an earth ground.
  - c. Use a SSVM or VOM with 1000 ohms per-volt or higher sensitivity to measure the AC voltage drop across the resistor (see Figure 1-1).
  - d. Connect the resistor to an exposed metal part having a return path to the chassis(metal cabinet, screw heads, knobs, shafts, escutcheon, etc.) and measure the AC voltage drop across the resistor.
  - e. Any reading of 5.25 Volt RMS(this corresponds to 3.5 milliampere AC) or more is excessive and indicates a potential shock hazard. Correct the shock hazard before returning the monitor to the user.

### 1-1-5 Product Safety Notices

Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection. The protection they give may not be obtained by replacing them with components rated for higher voltage, wattage, etc. A substitute replacement that does not have the same safety characteristics as the recommended replacement part may create shock, fire and / or other hazards. Product safety is under review continuously and new instructions are issued whenever appropriate.

**WARNING :** This product includes critical mechanical and electrical parts which are essential for x-radiation safety. For continued safety replace critical components indicated in the service manual only with exact replacement parts given in the parts list. Operating high voltage for this product is 26.8kV at maximum brightness. Refer to service manual for measurement procedures and proper service adjustments.



## 1-2 Servicing Precautions

**WARNING :** An electrolytic capacitor installed with the wrong polarity might explode.

**Caution :** Before servicing instruments covered by this service manual and its supplements, read and follow the Safety Precautions section of this manual.

**Note :** If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions, always follow the safety precautions.

### 1-2-1. General Servicing Precautions

1. Servicing precautions are printed on the cabinet, and should be followed closely.
2. Always unplug the unit's AC power cord from the AC power source before attempting to :  
(a) remove or reinstall any component or assembly, (b) disconnect PCB plugs or connectors,  
(c) connect a test component in parallel with an electrolytic capacitor.
3. Some components are raised above the printed circuit board for safety. An insulation tube or tape is sometimes used. The internal wiring is sometimes clamped to prevent contact with thermally hot components. Reinstall all such elements to their original position.
4. After servicing, always check that the screws, components and wiring have been correctly reinstalled. Make sure that the portion around the serviced part has not been damaged.
5. Check the insulation between the blades of the AC plug and accessible conductive parts(examples: metal panels, input terminals and earphone jacks).
6. Insulation Checking Procedure : Disconnect the power cord from the AC source and turn the power switch ON. Connect an insulation resistance meter(500 V) to the blades of the AC plug.  
  
The insulation resistance between each blade of the AC plug and accessible conductive parts(see above) should be greater than 1 MΩ.
7. Never defeat any of the +B voltage interlocks. Do not apply AC power to the unit (or any of its assemblies) unless all solid-state heat sinks are correctly installed.
8. Always connect a test instrument's ground lead to the instrument chassis ground before connecting the positive lead; always remove the instrument's ground lead last.

## Precautions

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### 1-3 Electrostatically Sensitive Devices(ESD) Precautions

Some semiconductor (solid state) devices can be easily damaged by static electricity. Such components are commonly called Electrostatically Sensitive Devices(ESD). Examples of typical ESD devices are integrated circuits and some field-effect transistors. The following techniques will reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground. Alternatively, wear a discharging wrist-strap device. To avoid a shock hazard, be sure to remove the wrist strap before applying power to the monitor.
2. After removing an ESD-equipped assembly, place it on a conductive surface such as aluminum foil to prevent accumulation of an electrostatic charge.
3. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESDs.
4. Use only a grounded-tip soldering iron to solder ESDs.
5. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESDs.
6. Do not remove a replacement ESD from its protective package until you are ready to install it. Most replacement ESDs are packaged with leads that are electrically shorted together by conductive foam, aluminum foil or other conductive materials.
7. Immediately before removing the protective material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.

**Caution :** Be sure no power is applied to the chassis or circuit and observe all other safety precautions.

8. Minimize body motions when handling unpackaged replacement ESDs.  
Motions such as brushing clothes together, or lifting your foot from a carpeted floor can generate enough static electricity to damage an ESD.

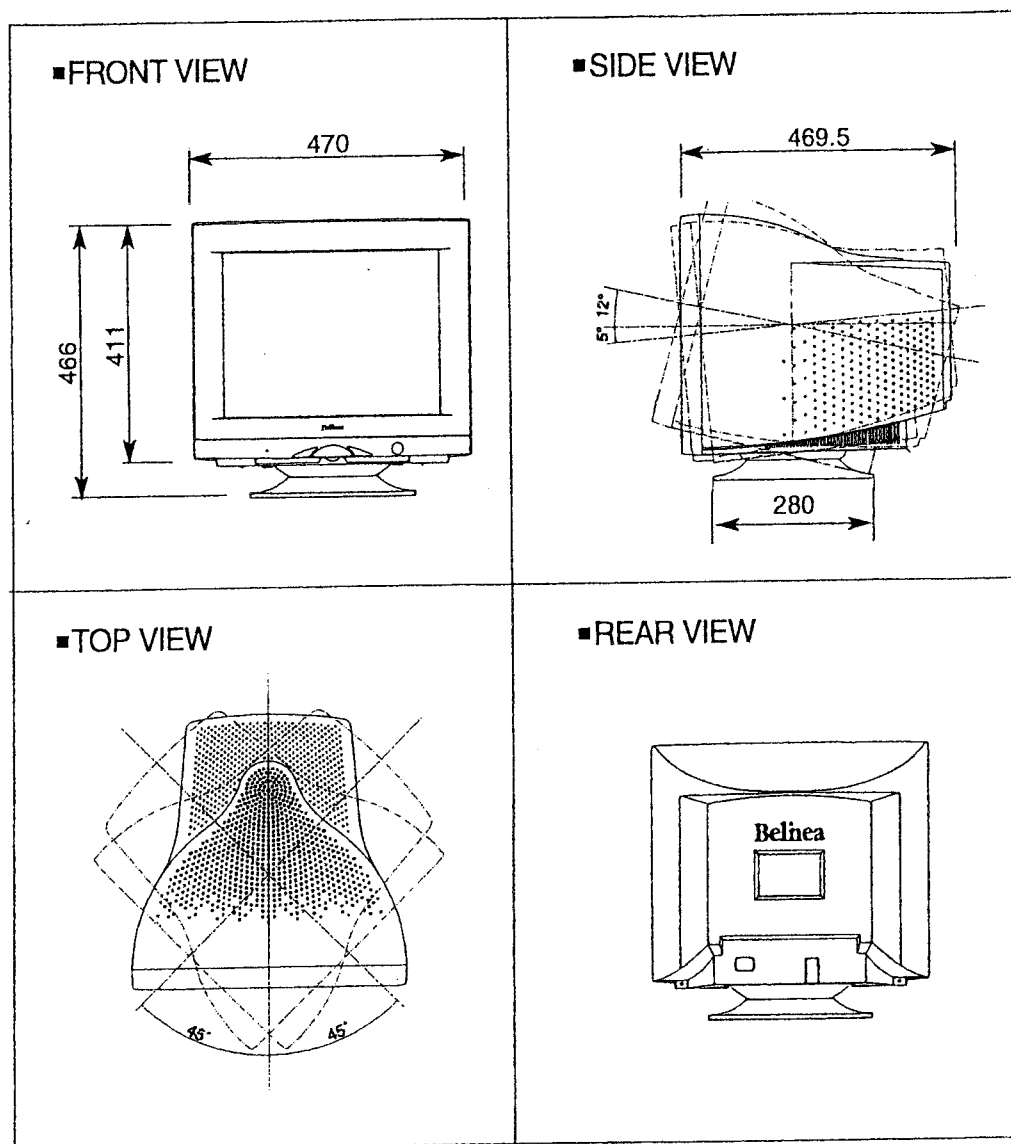
## 2. Product Specifications

### 2-1 Specifications

ITEM	DESCRIPTION
Picture Tube :	19 Inch(48cm) : 18 Inch(45cm) Visual, Full square/flat face tube, 90° deflection, 0.24mm Dot pitch, Semi-tint, Non-glare and Anti-static coating.
Scanning Frequency	Horizontal : 30KHz to 96KHz Vertical : 50Hz to 160Hz(Automatic)
Display Colors Analog input	Unlimited Colors
Maximum Resolution	Horizontal : 1600 Dots Vertical : 1200 Lines
Input Video Signal	Analog 700mVpp positive at 75 $\Omega$ internally terminated
Input Sync signal	Composite Sync : TTL level positive/negative Separate Sync : TTL level positive/negative
Maximum Pixel Clock	202.5MHz
Active Display	Horizontal : 350mm $\pm$ 4mm Vertical : 262mm $\pm$ 4mm
Input Voltage	180~264V AC $\pm$ 10%, 60Hz/50Hz $\pm$ 3Hz
Power Consumption	120 Watt(Max)
Dimensions unit (WxDxH) Carton(WxDxH)	16.5 $\times$ 16.5 $\times$ 16.4Inch(418 $\times$ 419 $\times$ 417mm) 20.9 $\times$ 20.0 $\times$ 18.2Inch(530 $\times$ 508 $\times$ 462mm)
Weight	23.3kg(monitor only)
Environmental Considerations	Operating Temperature : 0°C to 35°C Humidity : 10% to 90% Height : 3000m Storage Temperature : -25°C to 60°C Humidity : 10% to 90% Transport(packed) Temperature : -40°C to 70°C Humidity : 5% to 95%
CRT Code No	M46QCK 761 $\times$ 123

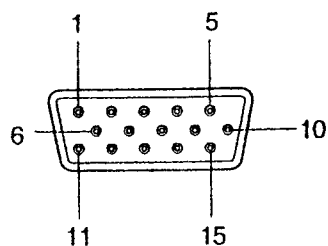
## Product Specifications

### 2-2 Dimensions



## 2-3 Pin Assignment Table D-sub 15 Pin Connector

The 15-pin D-sub connector(male) of the signal cable (IBM systems) :



Pin No	Assignment	Pin No	Assignment
1	Red Video	9	N/C
2	Green Video	10	ID
3	Blue Video	11	Ground
4	Frame Ground	12	SDA
5	Ground	13	H.Sync
6	Red Video Ground	14	V.Sync
7	Green Video Ground	15	SCL
8	Blue Video Ground		

## Product Specifications

### 2-4 Timing chart

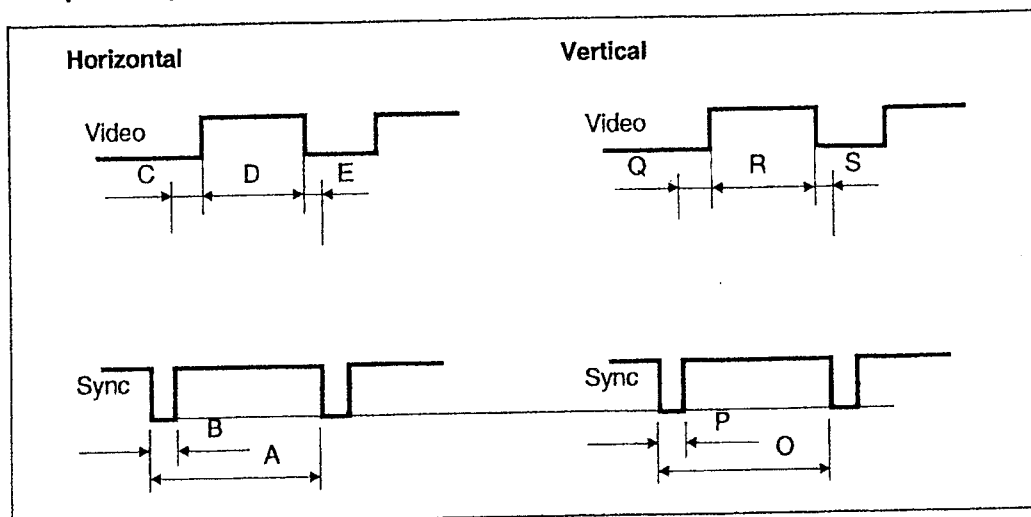
This section of the service manual describes the timing that the computer industry recognizes as standard for computer-generated video signals.

■ Table 2-1 Timing Chart

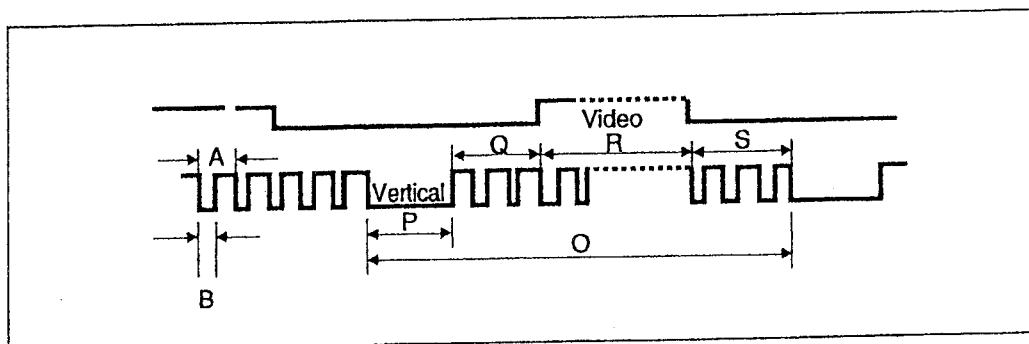
RESOLUTION		640 × 480			720 × 400	800 × 600		832 × 624
Description								
H	f KHz	31.469	35.000	37.500	31.469	46.875	53.674	49.726
	A μsec	31.778	31.778	21.333	18.631	16.660	14.561	12.387
	B μsec	3.813	3.813	1.616	1.138	1.219	1.016	1.057
	C μsec	1.907	1.907	3.232	14.222	13.003	10.836	1.491
	D μsec	25.422	25.442	16.162	25.422	16.162	14.222	9.39
	E μsec	0.636	0.616	0.323	0.569	0.203	0.508	0.449
	Polarity	NEG.	NEG.	POS.	NEG.	POS.	POS.	NEG.
V	f Hz	59.940	66.667	75.000	70.090	75.000	85.061	74.551
	O msec	16.683	14.268	13.333	11.756	13.328	11.765	10.021
	P msec	0.064	0.064	0.064	0.056	0.050	0.044	0.037
	Q msec	1.048#	1.111	0.448	0.503	0.466	0.524	0.471
	R msec	15.253	12.711	12.800	11.179	12.795	11.183	9.513
	S msec	0.318	0.382	0.021	0.019	0.017	0.015	0
	Polarity	NEG.	NEG.	POS.	POS.	POS.	POS.	NEG.

RESOLUTION		1152 × 870	1024 × 768			1280 × 1024		1600 × 1200
Description								
H	f KHz	68.681	60.023	68.677	80.741	79.976	91.146	93.750
	A μsec	12.504	10.971	10.667	12.387	28.571	20.11	14.56
	B μsec	1.067	1.016	0.948	1.057	2.116	1.117	1.28
	C μsec	1.837	1.422	1.501	1.491	3.175	3.91	1.44
	D μsec	9.481	8.127	7.901	9.39	21.164	14.524	11.52
	E μsec	0.119	0.406	0.316	0.449	2.116	0.559	0.32
	Polarity	NEG.	POS.	POS.	POS.	POS.	POS.	POS.
V	f Hz	75.062	75.029	84.997	99.803	75.025	85.024	75.000
	O msec	13.329	11.761	13.333	10.021	15	13.414	13.32
	P msec	0.038	0.033	0.032	0.037	0.086	0.06	0.04
	Q msec	0.475	0.483	0.491	0.471	1.114	0.784	0.56
	R msec	12.804	11.215	12.800	9.513	13.714	12.549	12.66
	S msec	0.013	0.011	0.011	0	0.086	0.02	0.04
	Polarity	NEG.	POS.	POS.	POS.	POS.	POS.	POS.

■ Separate Sync



■ H/V Composite Sync



A	Line time total	O	Frame time total
B	Sync width	P	Sync width
C	Back porch	Q	Back porch
D	Active time	R	Active time
E	Front porch	S	Front porch
O	Frame time total		

### 3. Operating Instructions

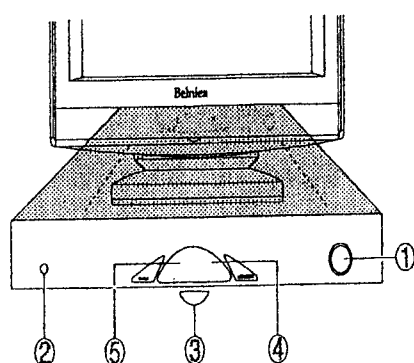
#### 3-1 Front View and Controls Panel

##### OSD Controls

The OSD appears on the screen when you press MENU button.

"ON SCREEN MENU" controls include the following extended controls such as Size, Position, Geometry Distortion, Color temp, Degauss, Moire on & off, Language, OSD-Position, Recall, Cont & Brt, etc.

The OSD menu appears in a window on your screen. It allows you to select the image settings you want to change.



##### ■ How to open the OSD menu.....

1. Press the MENU/EXIT button (④ in figure 4) to display the OSD menu on the screen.
2. Select the desired function icon using the OSD dial (③ in figure 4, see the following section "OSD Menulcons").
3. Press the ENTER button (⑤ in figure 4) to activate the function
4. Enter the desired value by turning the OSD dial.
5. To store the setting, press the ENTER button again. Repeat steps 2-4 to make further adjustments as needed.
6. The OSD menu will automatically disappear if no changes are made for more than 10 seconds. The current settings will be saved. You can also close it manually by pressing the MENU/EXIT button.

##### On Screen Display

This monitor features an On Screen Display(OSD) that shows information about the display settings. The OSD appears on the screen when you select a MENU button. "ON SCREEN MENU" controls include the following extended controls such as size, position, Geometry, color Adjust, Brightness and contrast utilities. Adjustments are saved instantly. The currently addressed control can be reset to factory settings by choosing the recall menu.



### 3-2 Display Power management Signaling (DPMS)

This monitor is EPA Energy Star compliant and NUTEK compliant when used with a computer equipped with the VESA DPMS function. If your computer system cannot support a display power management function, you may purchase an optional DPMS software program to take advantage of the power saving function. Please contact Hansol or your dealer, for more information.

■ Table 3-1 Display Power Management Signaling (DPMS) Standard

State Item	Normal Mode	Stand-by Mode	Suspend Mode	Power off Mode
H-Sync	ON	OFF	ON	OFF
V-Sync	ON	ON	OFF	OFF
Color of Power LED	Green	Orange	Orange	Flash orange
Power Consumption Typical	< 90 Watts	< 5 Watts	< 5 Watts	< 3 Watts
Power Consumption maximum	< 120 Watts	< 15 Watts	< 15 Watts	< 3 Watts
Recovery time	-	< 3 seconds	< 3 seconds	< 20 seconds

For Energy conservation turn your monitor off when the monitor is not needed, or when leaving it unattended for long periods.

The monitor automatically returns to the normal operation state when horizontal and vertical sync returns.

This occurs when you move your mouse or press a key on your keyboard.

## 4. Disassembly and Reassembly

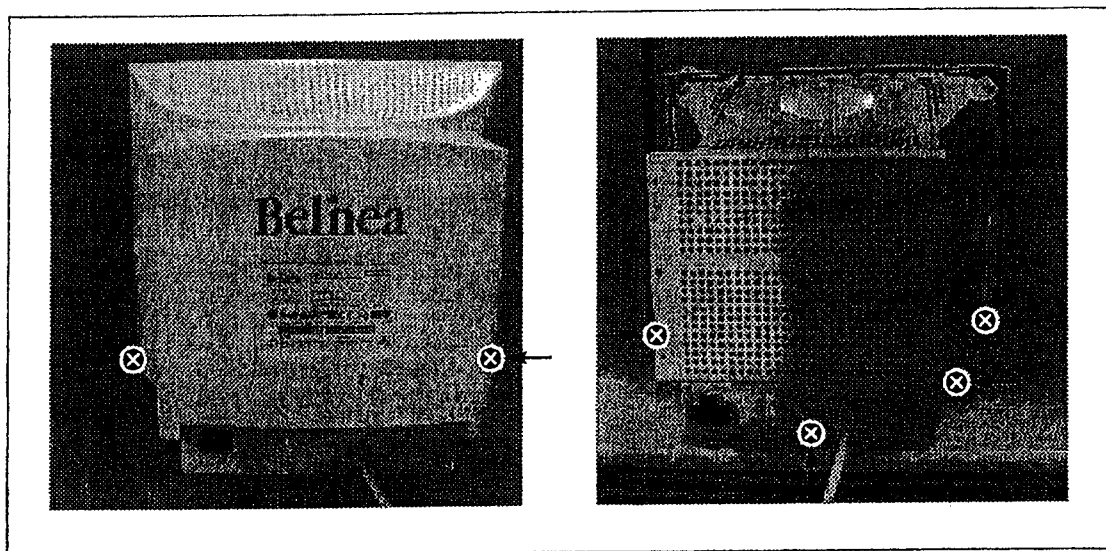
This section of the service manual describes the disassembly and reassembly procedure for the MAXDATA 106055 Monitor.

**WARNING :** This monitor contains electrostatically sensitive devices.  
Use caution when handling any components.

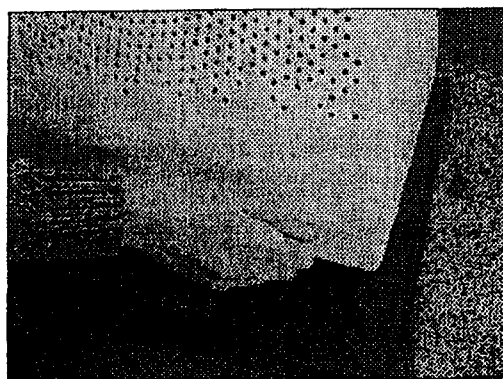
### 4-1 Disassembly

#### 4-1-1 Cabinet and Shield Cover Ass'y Removal

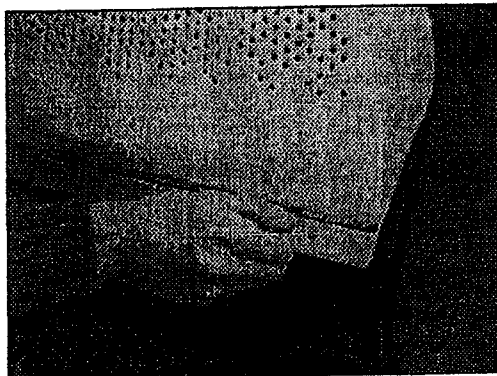
1. With a pad beneath it, stand monitor on its front with the CRT faceplate facing downward and the base closest to you. Make sure nothing will damage the CRT faceplate.
2. Working from back of the monitor, remove the 2 screws, and then remove the rear housing.
3. Remove the 4 screws, and then remove the Shield Cover Ass'y.



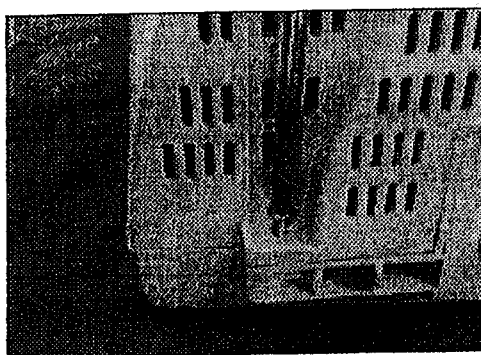
4. Incline the monitor by lifting the rear of the monitor..



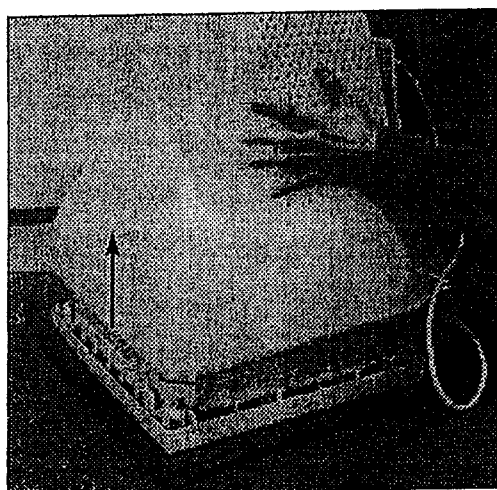
5. Push the Opening jig each groove along the top of monitor till it makes a "tak" sound.  
(2 grooves : Left and Right, Make sure each snap is disengaged.)



6. Release screws at two points with lifting slightly to do not reengage the upper snap of rear Housing.

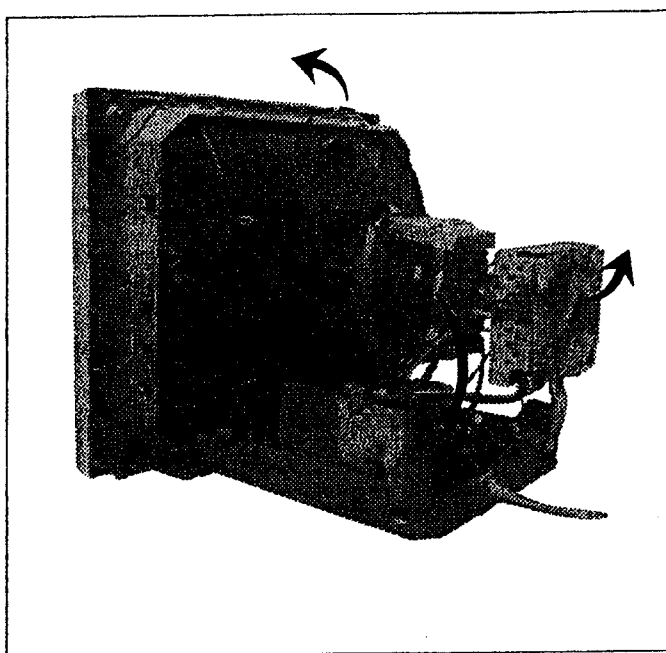


7. Pull the Rear Housing up off the monitor.



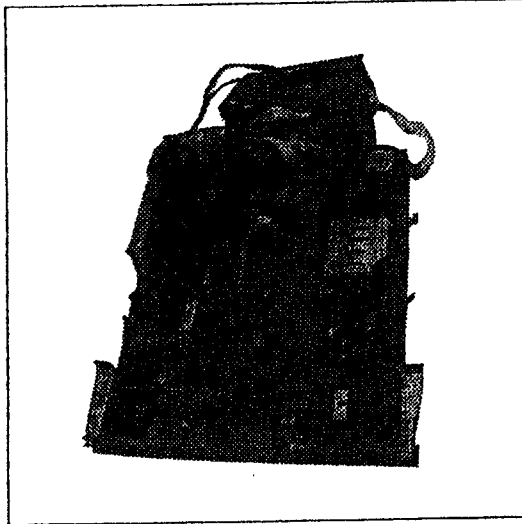
**4-1-2 Main PCB and Socket PCB Removal**

1. Remove the Anode Cap.(Be careful!!)
2. Remove the Degaussing connector(CN101-1,2) in the Main PCB.
3. Remove the CN405,CN406 in the Socket PCB. (CRT Ground)
4. Remove the Socket PCB from the CRT.
5. Remove the stand from the Main Chassis.
6. Remove the 2 screw from the Main Chassis and Front Bezel.
7. Remove the CN301 CN302 and CN105, CN502, CN504,CN505 from the PCB as pulling the Socket PCB and Main PCB assembly.



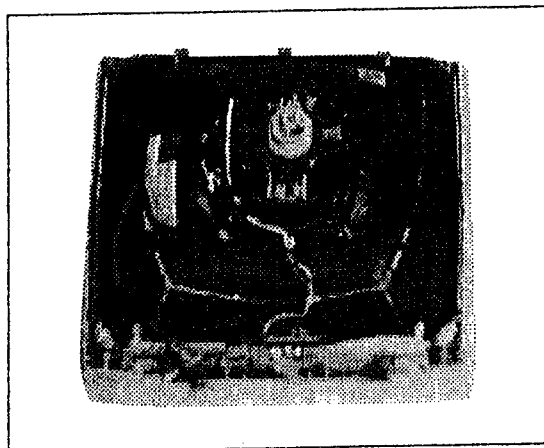
### 4-1-3 Main PCB and Socket PCB Division

1. Remove the connectors CN404 on the Socket PCB.
2. Remove the Focus wire(Red and White) from the CN407.
3. Remove the Socket PCB from the Main PCB.
4. Remove the 6 screws on the main PCB and 1 screw in the FBT Heat Sink and 2 screw in the Main Chassis. and 2 screws in the PFC Bracket
5. Remove the Main Chassis from the Main PCB.



### 4-1-4 CRT Removal

1. Remove the 2 Screws around CRT chassis.
2. Remove the 4 screws from the Front Bezel.
3. Remove the CRT ground wire and Degaussing Coil.
4. Remove the Bezel.



**Caution:** 1 Do not lift the CRT by the neck.

2. If you will be reinstalling this CRT to the monitor, be sure to place the CRT face down on a protective pad.

## 4-2 Reassembly

**Caution :** Always use a protective pad under the CRT to protect its faceplate.

### 4-2-1 CRT Reassembly

1. Position the CRT on the Bezel and replace the 4 screws.
2. Replace the Degaussing Coil and ground wire Ass'y on the CRT chassis..
3. Replace it's 2 screws with a Insulation sheet.

### 4-2-2 Main PCB and Socket PCB Combination

1. Position the Main PCB on the Main Chassis and replace the 6 screws  
and 2 screws on the PFC Bracket
2. Replace the 2 screws of the FBT Heat Sink and Main chassis.
3. Reconnect the FOCUS WIRE(Red and White) to the CN407.
4. Reconnect the CN404.

### 4-2-3 Main PCB and Socket PCB Reassembly

1. Reconnect the Connector CN301 and CN302, CN105, CN502, CN504,CN505.
2. Reconnect the Socket PCB and the Degaussing Connector(CN101-1,2).
3. Reconnect the CRT Ground Wire(CN405,CN406).
4. Reconnect the Anode cap. (Be Carefull!)
5. Put the assembly and replace the 2 screws of the Main Chassis and Front Bezel.
6. Replace the stand.

### 4-2-4 Cabinet Reassembly

1. Lay the monitor down on its faceplate.
2. Replace the Shield Cover Ass'y and 4 screws.
3. Replace the rear housing and 2 screws.
3. Set the monitor on its stand and make sure the CRT faceplate was not scratched or otherwise damaged.

## **5. Alignment and Adjustments**

This section of the service manual explains how to make permanent adjustments to the monitor.

### **5-1 General Instructions**

#### **5-1-1 Before making Adjustments**

##### **5-1-1(a) ORIENTATION**

When servicing, always face monitor to the east.

##### **5-1-1(b) MAGNETIC FIELDS**

Whenever possible, use magnetic field isolation equipment such as a Helmholtz field to surround the monitor. If a Helmholtz field is not available frequently degauss the unit under test.

**Caution :** Other electrical equipment may cause external magnetic fields which may interfere with monitor performance.

Use an external degaussing coil to limit magnetic build up on the monitor.

If an external degaussing coil is not available, use the internal degaussing circuit.

However, do not use the internal degaussing circuit more than once per 30 minutes.

##### **5-1-1(c) TEST AND BURN-IN MODE**

Remove the signal cable from the monitor.

Warm it up for 30 minutes before servicing the monitor.

##### **5-1-1(d) WARM-UP TIME**

The monitor must be on for 30 minutes before starting alignment. Warm-up time is especially critical in color temperature and white balance adjustments.

##### **5-1-1(e) SIGNAL**

Analog, 700mVpp positive at 75 ohm termination sync:Separate/composite  
(TTL level negative/positive)

**5-1-1(f) SCANNING FREQUENCY**

Horizontal : 30kHz to 96kHz

Vertical : 50Hz to 160Hz(Automatic)

Unless otherwise specified, adjust to 1280 × 1024 mode (H:91kHz, V:85Hz) signals.

Refer to Table 2-1

**5-1-1(g) HIGH VOLTAGE ADJUSTMENT**

Monitor condition : Factory Mode(Menu key+power button)

Signal : 1280 × 1024(H:91kHz and V:85Hz)

Contrast : Maximum

Brightness : Maximum

Go to the zoom menu in factory mode and press the enter button for 2-3 seconds.

Using the OSD dial to adjust High Voltage to 26.8kV  $\pm 0.1$ kV

**5-1-1(h) CENTER RASTER**

Adjust VR301 so that back raster comes to center when you apply a signal of H:91kHz/V:85Hz.

**5-1-1(i) Brightness and Contrast**

Unless otherwise specified, adjust the OSD Controls;

Brightness : cut-off( $\leq 0.08$  FI)

Contrast : Maximum



**5-1-2 Required Equipment**

The following equipment may be necessary for adjustment procedures:

**5-1-2(a) Display Control Adjustment**

1. Non-metallic(-)screwdriver : 1.5mm  
Non-metallic(-)screwdriver : 3mm
2. Philips(+)screwdriver : 3mm
3. Non-metallic hex key : 2.5mm
4. Digital Multimeter(DMM), or Digital Voltmeter(DVM)
5. Signal generator, or computer with a video board 1280 × 1024 @ 75Hz  
Required software: displaymate for windows from Sonera technologies

**5-1-3(b) Color Adjustments**

1. Color analyzer, or any luminance measurement equipment

**5-1-3 After making Adjustments**

After finishing all adjustments, test monitor in all directions. If, for example, the monitor does not meet adjustment specifications when facing north, reposition the monitor to face the east and readjust it. This time, try for an adjustment closer to the ideal setting within the tolerance range. Test the unit again in all directions.

If the monitor again fails to meet specifications, contact your Regional After Service Center for possible CRT replacement.

## 5-2 Display Control Adjustments

### 5-2-1 Centering

Centering means to position the center point of the display in the middle of the display area.  
Horizontal size and position and vertical size and position control the centering of the display.

#### CONDITIONS

Scanning frequency : 91kHz/85Hz  
Display image : Crosshatch pattern  
Brightness : cut-off ( $\leq 0.08$  FI)  
Contrast : Maximum

Adjust the horizontal size and vertical size to their optimal settings : (4:3ratio)  
350mm(H)  $\times$  262mm(V).

Adjust the horizontal position and vertical position to  $\leq 5.0$  and 5.0mm of the center point of the screen.

$$\bullet |A - B| \leq 5\text{mm} \quad \bullet |C - D| \leq 5\text{mm}$$

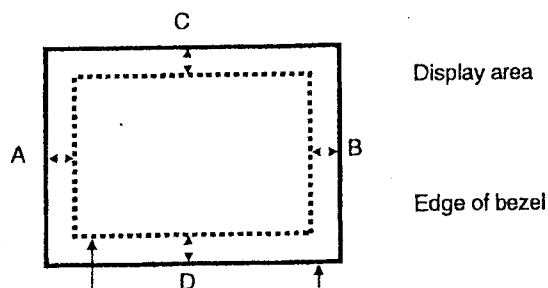


Fig. 5-1 Centering

### 5-2-2 Linearity

Linearity affects the symmetry of images as they display on the screen. Unless each row or column of blocks in a crosshatch pattern is of equal size, or within the tolerances shown in Tables 5-1, the image appears distorted, elongated or aquashed.

Linearity is controlled both horizontally and vertically.

#### CONDITIONS

Scanning frequency : 91kHz/85Hz  
Display image : Crosshatch pattern  
Brightness : cut-off ( $\leq 0.08$  FI)  
Contrast : Maximum

Table 5-1

Horizontal Linearity	(All modes) $\leq 5\%$
Vertical Linearity	(All modes) $\leq 5\%$

$$\frac{\text{MAX}-\text{MIN}}{\text{MAX}+\text{MIN}} \times 100$$

Patten 10X8 Cross hatch pattern(Test method in accordance to DIN 66234 T9)

## 5-2-3 Trapezoid Adjustment

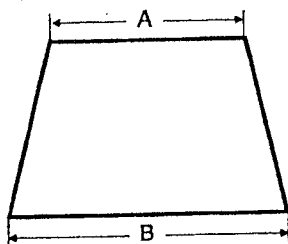
### CONDITIONS

Scanning frequency : 91kHz/85Hz

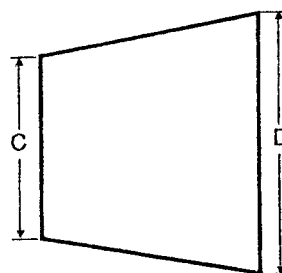
Display image : Crosshatch pattern

Brightness : cut-off ( $\leq 0.08 \text{ FI}$ )

Contrast : Maximum



$$\bullet |A - B| \leq 2.5\text{mm}$$



$$\bullet |D - C| \leq 2.5\text{mm}$$

## 5-2-4 Pinbalance Adjustment

**CONDITIONS**

Scanning frequency : 91kHz/85Hz  
Display image : Crosshatch pattern  
Brightness : cut-off ( $\leq 0.08$  FI)  
Contrast : Maximum

At the Pinbalance on the geometry menu, Using the OSD dial to make the image or the test pattern rectangular.

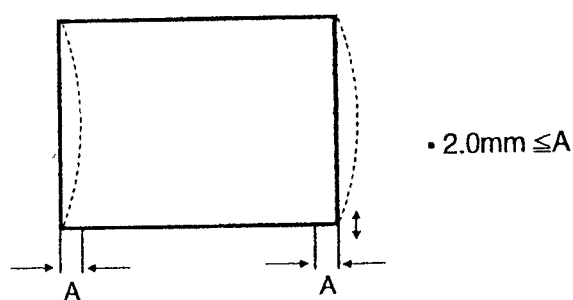


Fig. 5-3 Pinbalance

## 5-2-5 Parallelogram Adjustment

**CONDITIONS**

Scanning frequency : 91kHz/85Hz  
Display image : Crosshatch pattern  
Brightness : cut-off ( $\leq 0.08$  FI)  
Contrast : Maximum

At the PARALLELOGRAM on the GEOMETRY menu, Using the OSD dial to make the image or the test pattern rectangular.

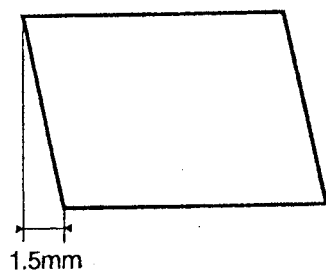


Fig. 5-4 Parallelogram

## 5-2-6 Side Pincushion Adjustment

## CONDITIONS

Scanning frequency : 91kHz/85Hz  
 Display image : Crosshatch pattern  
 Brightness : cut-off ( $\leq 0.08$  FI)  
 Contrast : Maximum

At the Pincushion on the geometry menu, Using the OSD dial to make the image or the test pattern rectangular.

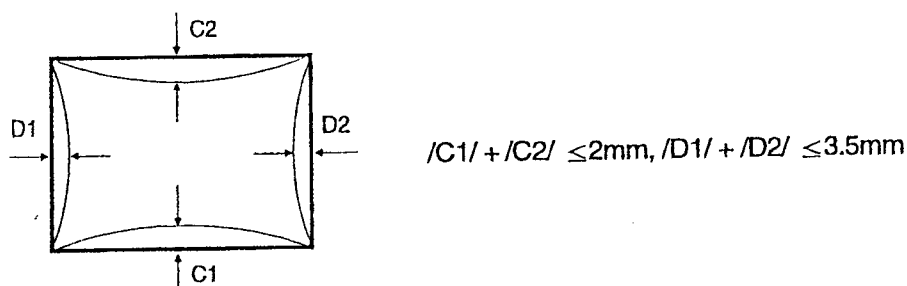


Fig. 5-5 Pincushion

## 5-2-7 Tilt Adjustment

## CONDITIONS

Scanning frequency : 91kHz/85Hz  
 Display image : Crosshatch pattern  
 Brightness : cut-off ( $\leq 0.08$  FI)  
 Contrast : Maximum

At the Rotation on the geometry menu, Using the OSD dial to make the image or the test pattern rectangular.

Use mechanical adjustment if correction needed is  $> 1.3$ mm

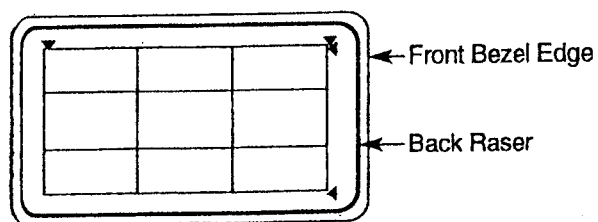


Fig. 5-6 CRT Tilt Adjustment

## 5-2-8 Degauss

The degaussing circuit can effectively function only once per 30 minutes. If available, use an external degaussing coil during servicing. No adjustments are available for the degaussing circuit.

\* After Finishing from setp 5-2-1 to step 5-2-7. Repeat for all modes.

### 5-3 Color Adjustment

Color temperature is a measurement of the radiant energy transmitted by a color.

For computer monitors, the color temperature refers to the radiant energy transmitted by white.

Color coordinates are the X and Y coordinates on the chromaticity diagram of wavelengths for the visible spectrum.

To make color adjustments you must have following configurations.

1. Color adjustment Jig and computer with software
2. Signal source
  - Video : Analog 700mVpp, 75ohms  
white box and Full white pattern
  - Sync : Separate TTL level  
1280 × 1024/85HZ
3. Monitor condition : Factory Mode(Menu key+power button)

#### 5-3-1 Color Adjustments for 9300°K

##### 5-3-1(a) Back raster adjustment

###### 1. Conditions

- Resolution: 1280 × 1024/85HZ
- Display image: Back raster pattern
- Brightness : cut-off( $\leq 0.08$  FI)
- Contrast : Maximum

###### 2. Procedure(R.G.B Bias Adjustment)

- a) Use the color adjustment Jig to set the "Y" coordinate to  $0.297 \pm 0.015$
- b) Use color adjustment Jig to set the "X" coordinate to  $0.283 \pm 0.015$

5-3-1(b) Video Gain Adjustment

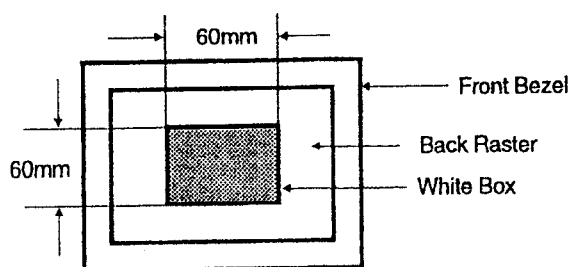


Fig. 5-7 White Box Pattern

1. Conditions

- Resolution: 1280 × 1024/85HZ
- Display image: White Box and Full white pattern
- Brightness : cut-off ( $\leq 0.08$  FI)
- Contrast : Maximum

2. Procedure(R.G.B Gain Adjustment)

- a) Use the color adjustment Jig and to adjust sub-contrast so that the brightness of white box is about  $40\text{FI} \pm 5$  with  $X=0.283 \pm 0.01$  and  $Y=0.297 \pm 0.01$
- b) use the color adjustment Jig and to adjust the ACL so that the brightness of the full white pattern is about  $33\text{FI} \pm 3$

**5-3-2 Color Adjustment for 6500°k****5-3-2(a) Back Rast Adjustment****1. Conditions**

- Resolution: 1280 × 1024/85HZ
- Display image: Back raster pattern
- Brightness : cut-off( ≤ 0.08 FI)
- Contrast : Maximum

**2. Procedure(R.G.B Bias Adjustment)**

- a) Use the color adjustment Jig and to download the 6500°k color Data.
- b) use the color adjustment Jig to set the "Y" coordinate to  $0.329 \pm 0.015$   
(Don't Adjust G-bias)
- c) Use color adjustment Jig to set the "X" coordinate to  $0.313 \pm 0.015$

**5-3-2(b) Video Gain Adjustment****1. Conditions**

- Resolution: 1280 × 1024/85HZ
- Display image: White Box and Full white pattern
- Brightness : cut-off( ≤ 0.08 FI)
- Contrast : Maximum

- a) Use the color adjustment Jig and to adjust sub contrast so that the brightness of white box is about  $40FI \pm 5$  With  $X=0.313 \pm 0.01$  and  $Y=0.329 \pm 0.01$  (Don't Adjust G-Gain)
- b) Use the color adjustment Jig and to check whether the brightness of full white pattern is about  $33FI \pm 3$

\* NOTE : After completing the color adjustment, perform the recall function to save the data.



**5-3-3 Focus Adjustment****CONDITIONS**

Scanning frequency : 91kHz/85Hz(1280 × 1024)  
Display image : Crosshatch pattern  
Brightness : cut-off ( $\leq 0.08$  FI)  
Contrast : Maximum

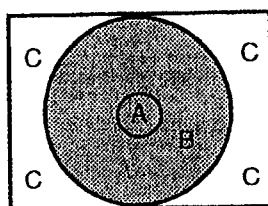
**PROCEDURE**

1. Adjust Focus VR on FBT to display sharpest image possible.
2. Use Locktite to seal Focus VR in position.

### 5-4 Convergence Adjustments

Misconvergence occurs when one or more of the electron beams in a multi beam CRT fail to meet the other beams at a specified point.

<b>Zone A(center point)</b>	$\leq 0.20$ mm in all modes
<b>Zone B(<math>\phi</math> 260)</b>	$\leq 0.30$ mm in all modes
<b>Zone C(350X260)</b>	$\leq 0.40$ mm in all modes
<b>Full size (365X274)</b>	$\leq 0.40$ mm in all modes



#### 5-4-1 Static (Center) Convergence

Static convergence involves the alignment of the red, blue and green lines in the center area of the display. See "Dynamic Convergence" for alignment of the color fields around the edges of the display.

#### CONDITIONS

Orientation : Monitor facing east  
 Warm-up : 30 minutes  
 Display Image : Crosshatch pattern  
 Tolerances : See Table 5-2

As shown in Figure 5-8, the CRT used in these monitors has the same magnet configuration.

Use the following steps to correct any static misconvergence:

1. Locate the pair of 4-pole magnet rings.
2. Unlock the rings and rotate the individual rings (change the spacing between tabs) to converge the vertical red and blue lines.
3. Rotate the pair of rings (maintaining the spacing between tabs) to converge the horizontal red and blue lines.
4. After completing the red and blue center convergence adjustment, locate the pair of 6-pole magnet rings.

5. Rotate the individual rings (change the space between tabs) to converge the vertical red and blue (magenta) and green lines.
6. Rotate the pair of rings (maintaining the space between tabs) to converge the horizontal red and blue (magenta) and green lines. Don't rotate the 2-pole magnets, as they adjust for color purity.
7. Mark the correct position for the magnets and apply a small line of glue to hold the magnets in place. Lock the rings in place.

#### 5-4-2 Dynamic (Edge) Convergence

Use the following procedure to correct minor dynamic (edge) misconvergence. If, after using this procedure, dynamic misconvergence is still greater than the tolerance around the periphery of the display area, contact the Regional After Service Center for possible CRT replacement.

1. Make sure the display is not affected by external magnetic fields.
2. Make sure the static convergence is properly adjusted.
3. Strategically place small magnetic strips on the back of the CRT to correct the misconvergence. Be careful not to remove the paper protecting the adhesive on the magnetic strip until you are satisfied with their placement and the dynamic convergence.
4. When you are satisfied with the convergence around the edge of the CRT, permanently glue the magnets to the back of the CRT.

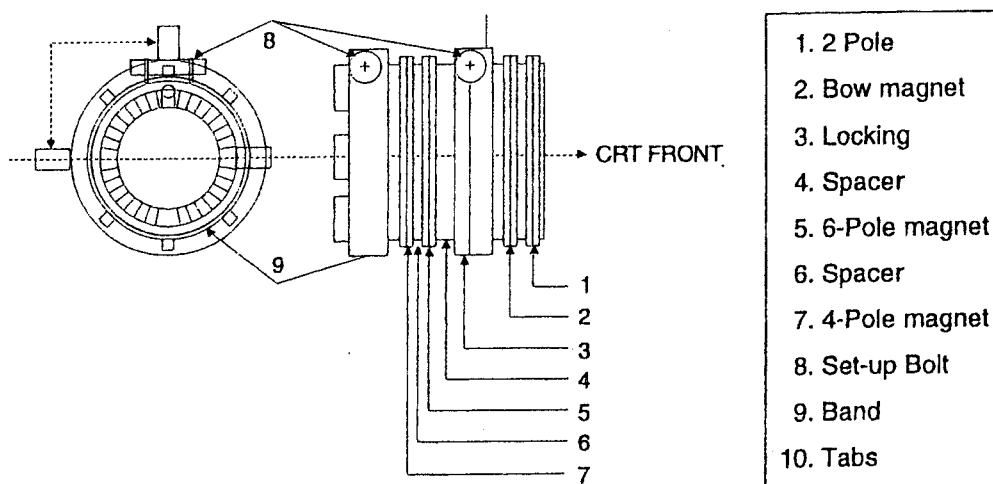



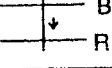


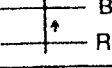

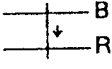
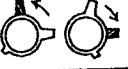
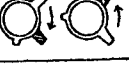
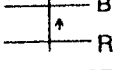
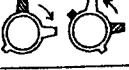
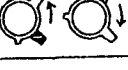


Fig. 5-8 Magnet Configuration

### ■ Red, Blue and Green Alignment(4-Pole Magnet Movement)

V-line		H-line	
Beam Displacement	4-Pole magnet Displacement	Beam Displacement	4-pole magnet Displacement
			
B   →   R			
B   ←   R			
		R   →   B	
		R   ←   B	

### ■ Red, Blue and Green Alignment(6-Pole Magnet Movement)







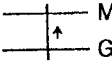

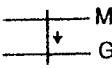
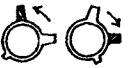
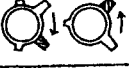
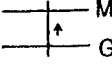
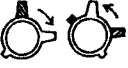
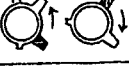
V-line		H-line	
Beam Displacement	6-Pole magnet Displacement	Beam Displacement	6-pole magnet Displacement
			
M   →   G			
G   ←   M			
		M   →   G	
		G   ←   M	


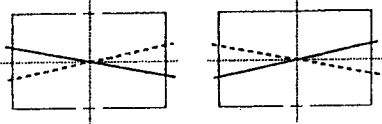
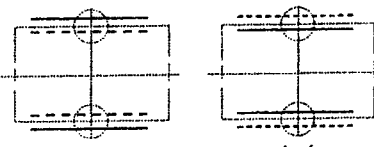
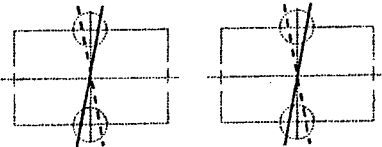
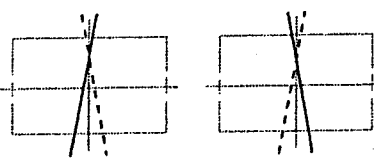
Fig 5-9. Magnet Movements

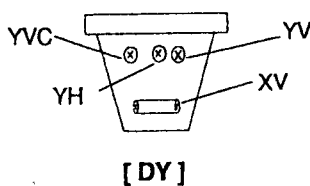
## 5-5 Balance Convergence Adjustments

### CONDITIONS

Orientation : Monitor facing east  
 Display Image : Crosshatch pattern mixed with RGB colors.  
 Required Tools : +Screwdriver hex key

\* Red ——— Blue - - - - - Green - . - . - . -

Marks	Mis-convergence pattern	Procedure/Remarks
Static Conv		<ul style="list-style-type: none"> <li>• Re-checking of static Conv</li> <li>• Best adjustment → White(Zero)</li> <li>• By purity Conv. magnet (4 poles and 6 poles)</li> </ul>
XV		<ul style="list-style-type: none"> <li>• Positions → Right Side</li> <li>• Cross pattern of red and blue</li> <li>• Using XV.Coil → Clockwise or counter-clockwise by core driver</li> </ul>
YV		<ul style="list-style-type: none"> <li>• Positions → T.B</li> <li>• Plus or minus pattern of red and blue</li> <li>• Using YV.volume → Clockwise or counter-clockwise by core driver</li> </ul>
YH		<ul style="list-style-type: none"> <li>• Positions → T.B</li> <li>• Plus or minus pattern of red/blue(M) and green</li> <li>• Using YH.volume → Clockwise or counter-clockwise by core driver</li> </ul>
YHC		<ul style="list-style-type: none"> <li>• Positions → T.B</li> <li>• Unbalanced Plus or minus pattern of red/ blue(M) and green</li> <li>• Using YHC.volume → Clockwise or counter-clockwise by core driver</li> </ul>



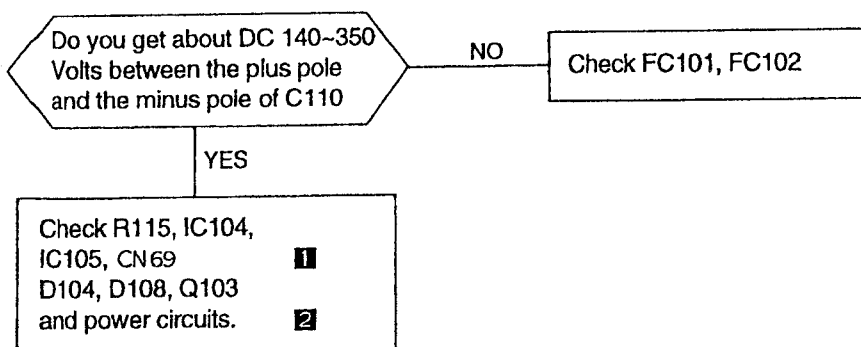
• The positions of adjustment coil and volumes (XY, YV, YH, YHc) on the terminal board are different depending on DY types.

## 6. Troubleshooting

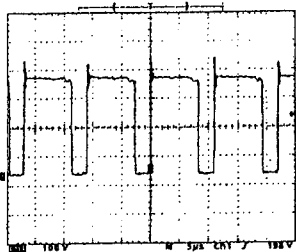
### Notes :

1. If picture does not appear, check the brightness and contrast controls before inspection.
2. Check the following circuits:
  - No raster appears : Power circuit, horizontal output circuit, High Voltage control circuit and High voltage output circuit.
  - High voltage develops but no raster appears: Video output circuits.
  - High voltage does not develop: High Voltage output circuits.

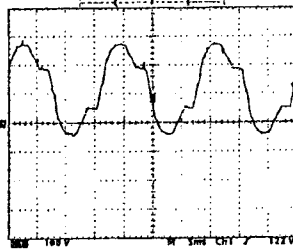
### 6-1 No Power



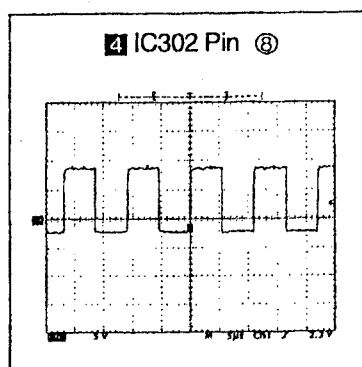
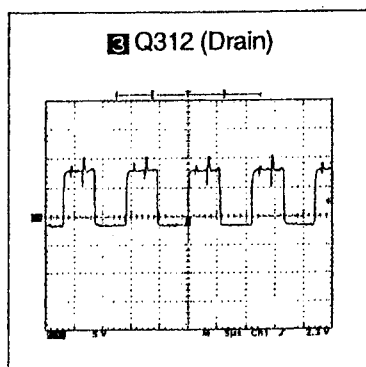
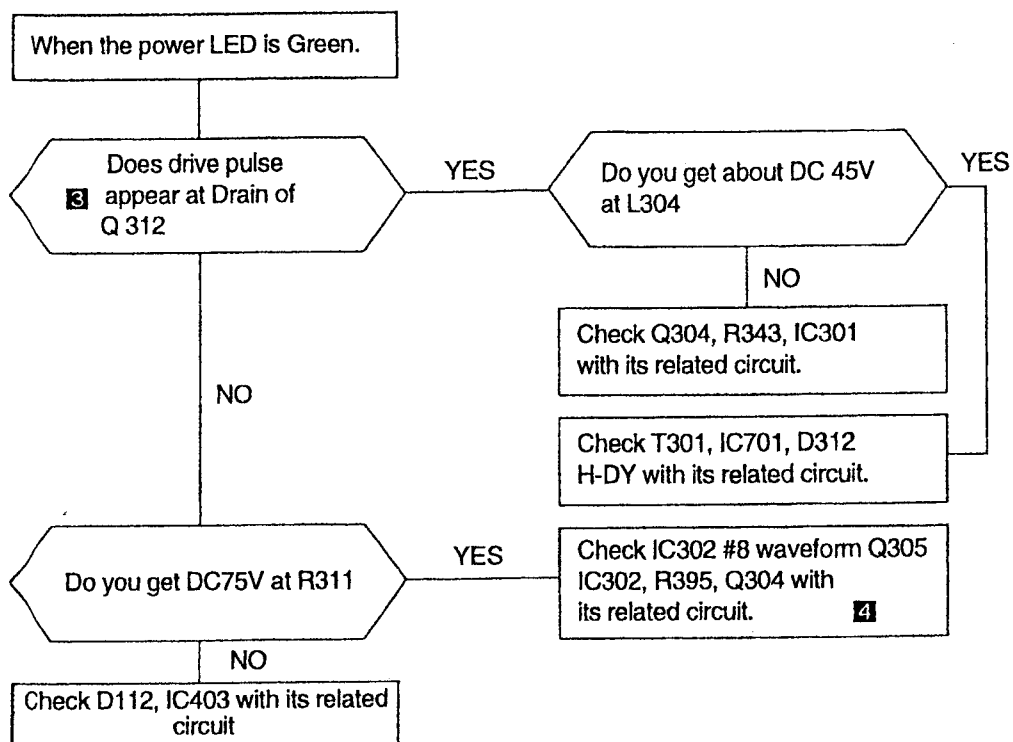
**1** IC104 Pin ①



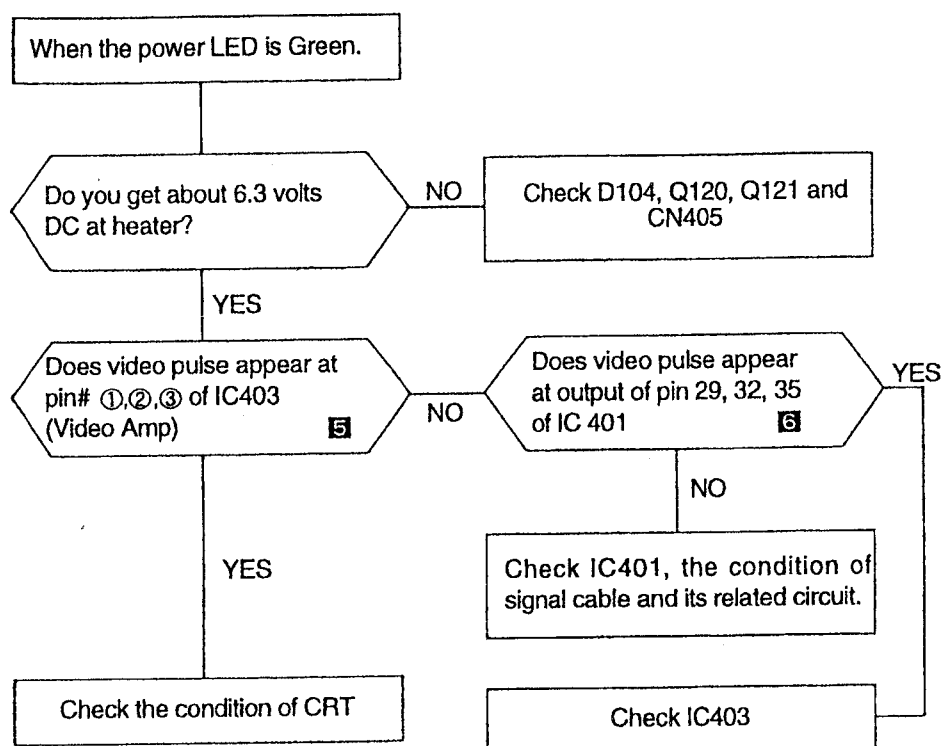
**2** T102 Pin ③



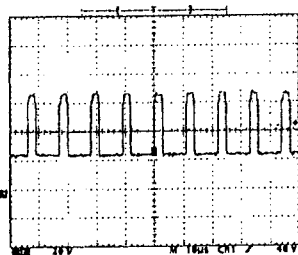
# 6-2 No Raster(1)



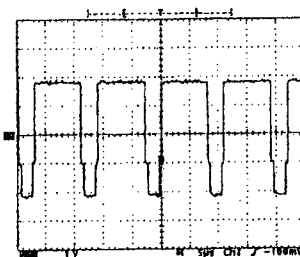
## 6-3 No Raster(2)



5 Pin ① ② ③ of IC403

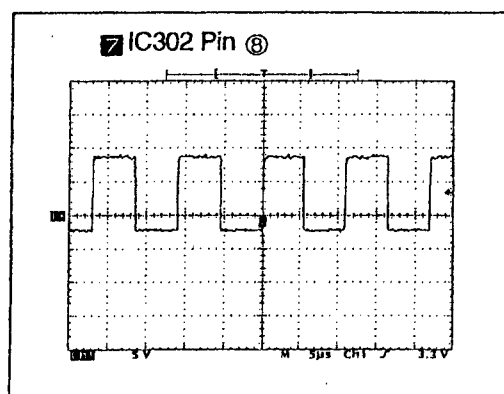
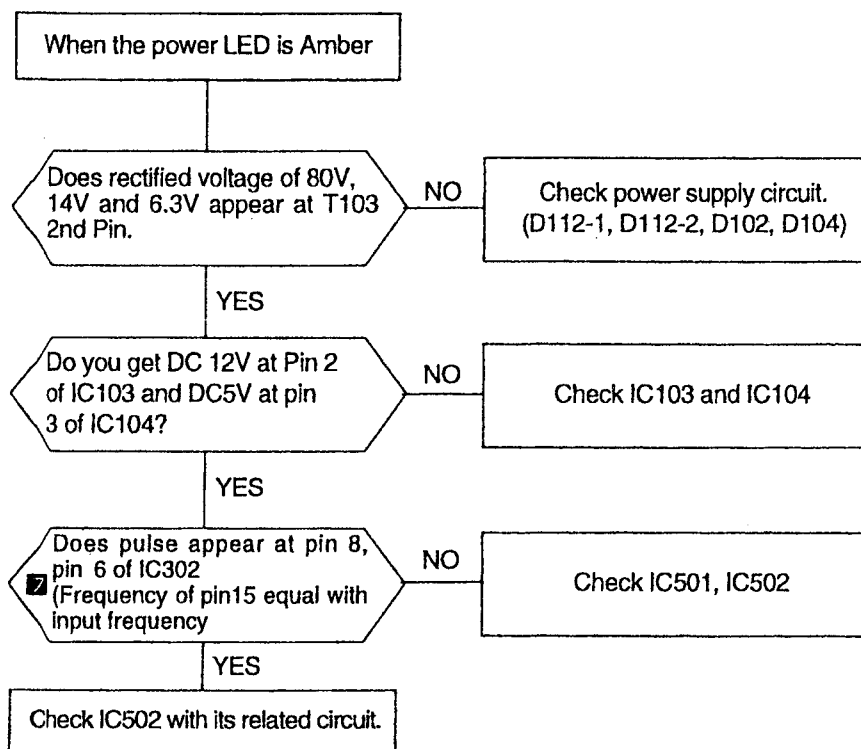


6 IC401 Pin 29, 32, 35

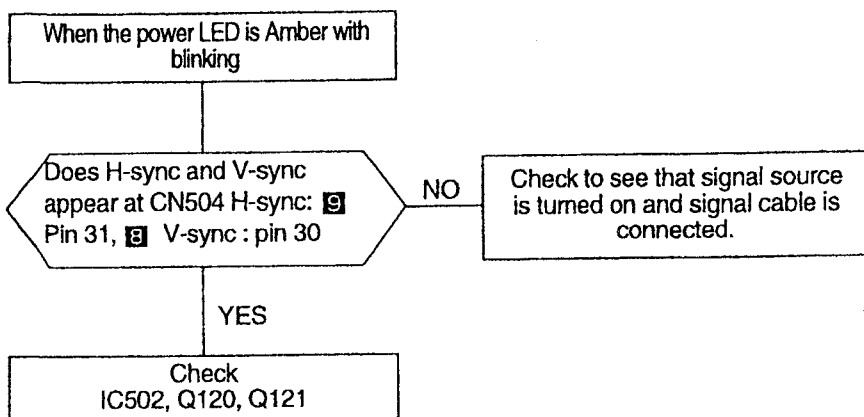




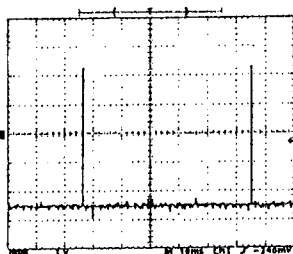
# 6-4 No Raster(3)



## 6-5 No Raster (4)



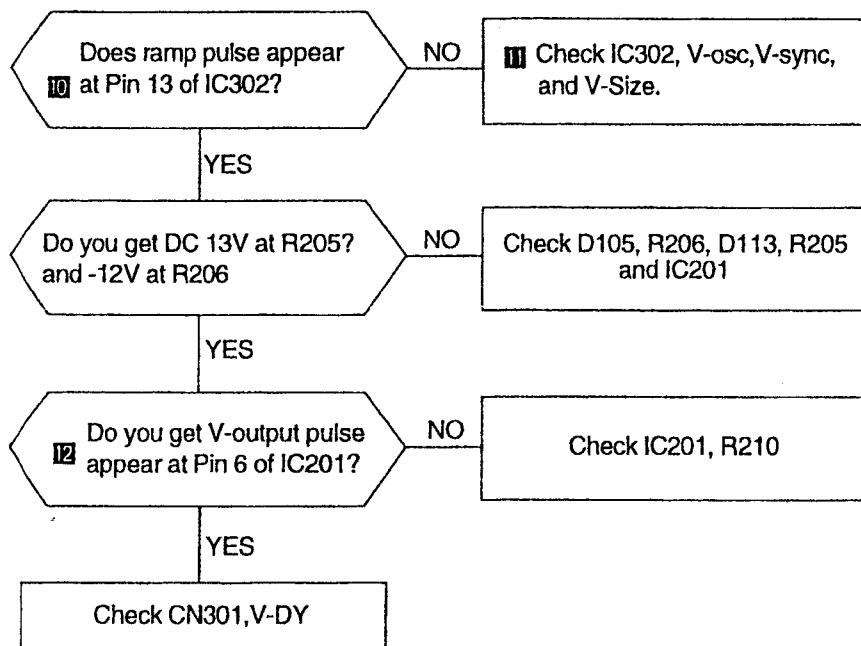
⑧ V-SYNC Pin ① of IC502



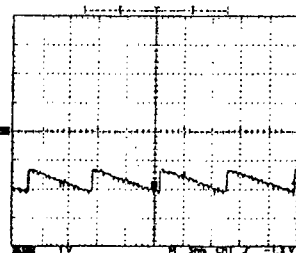
⑨ H-SYNC Pin ② of IC502



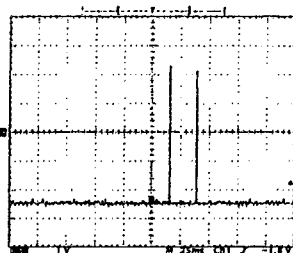
# 6-6 Horizontal Line On Raster



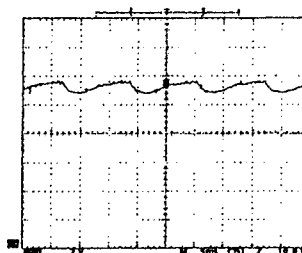
**10** IC302 Pin 13



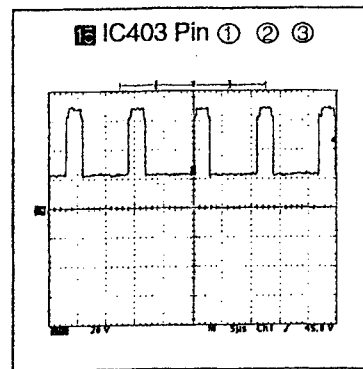
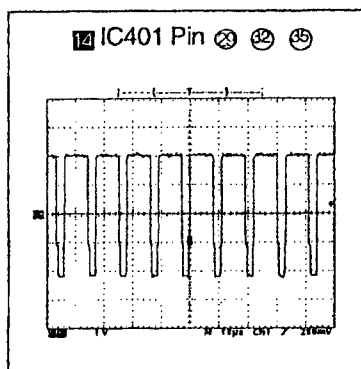
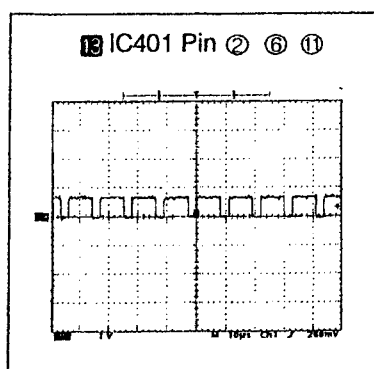
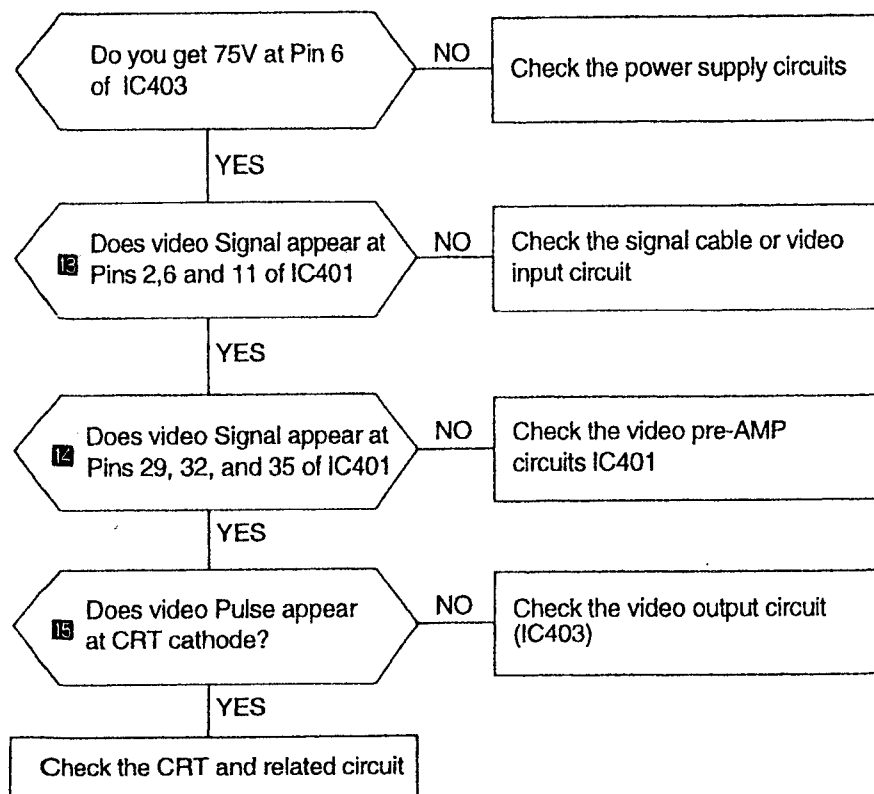
**11** IC302 Pin 14



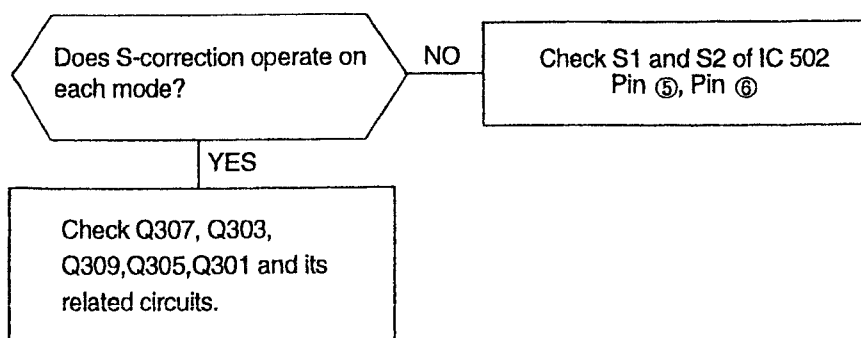
**12** IC201 Pin 6



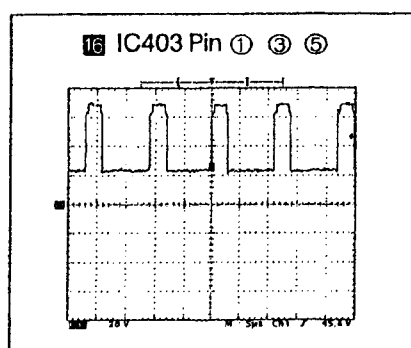
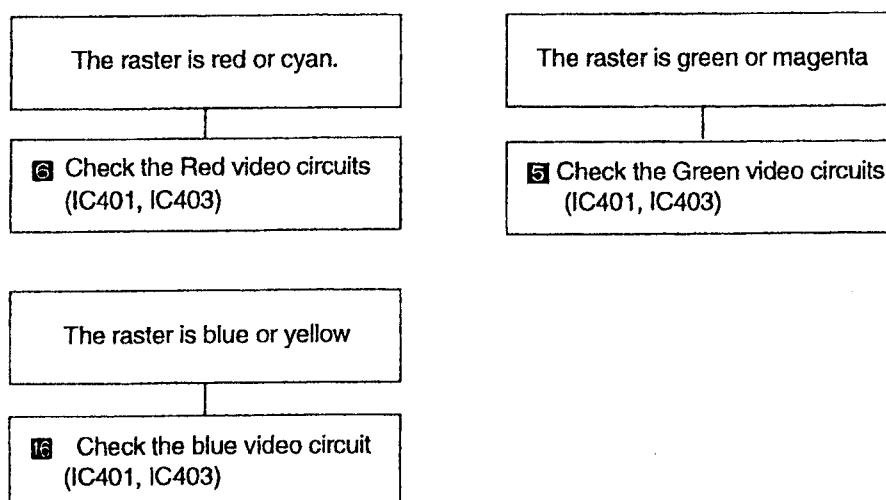
## 6-7 Raster Appears But Picture Does Not Show



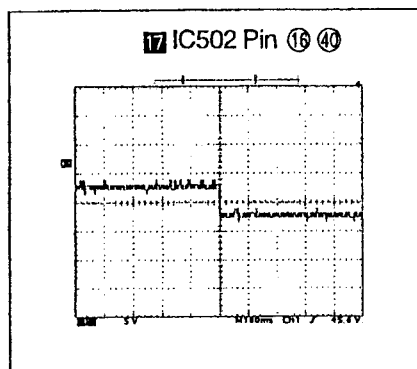
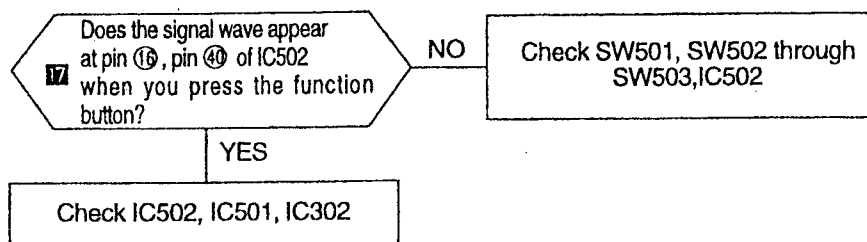
# 6-8 No S-Correction Value Each Mode



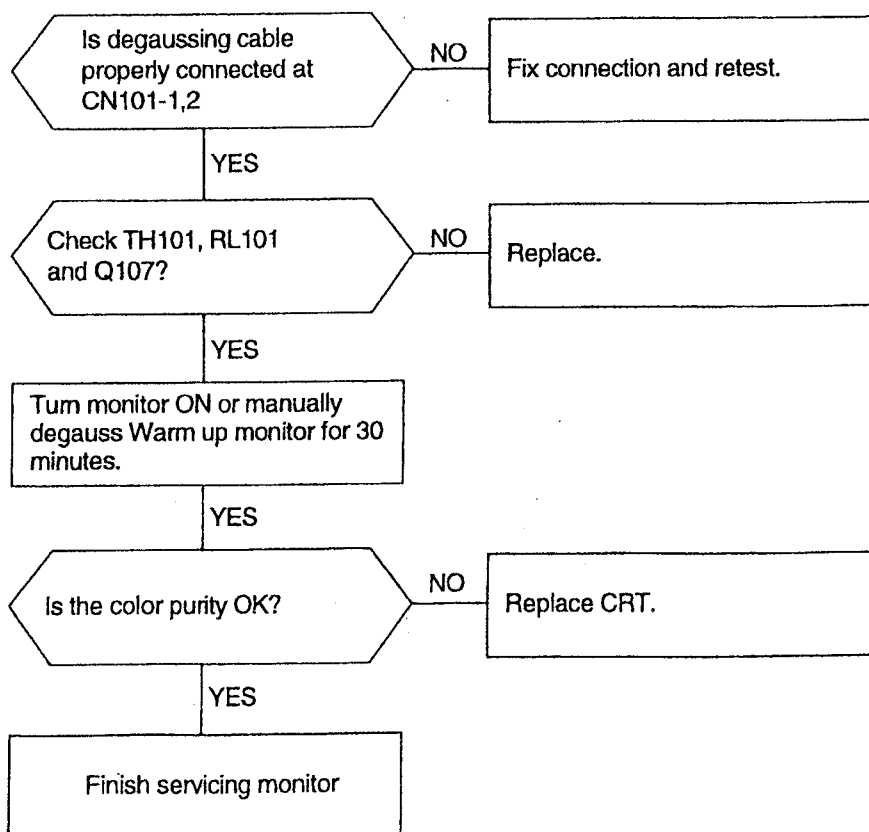
# 6-9 No Specific Color Appears



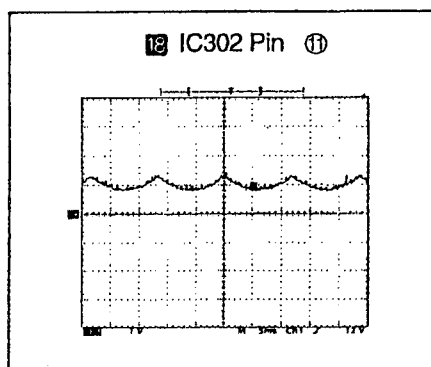
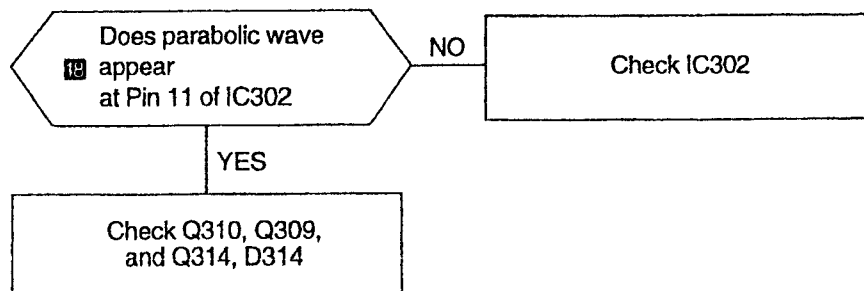
## 6-10 Function Key Doesn't Operate



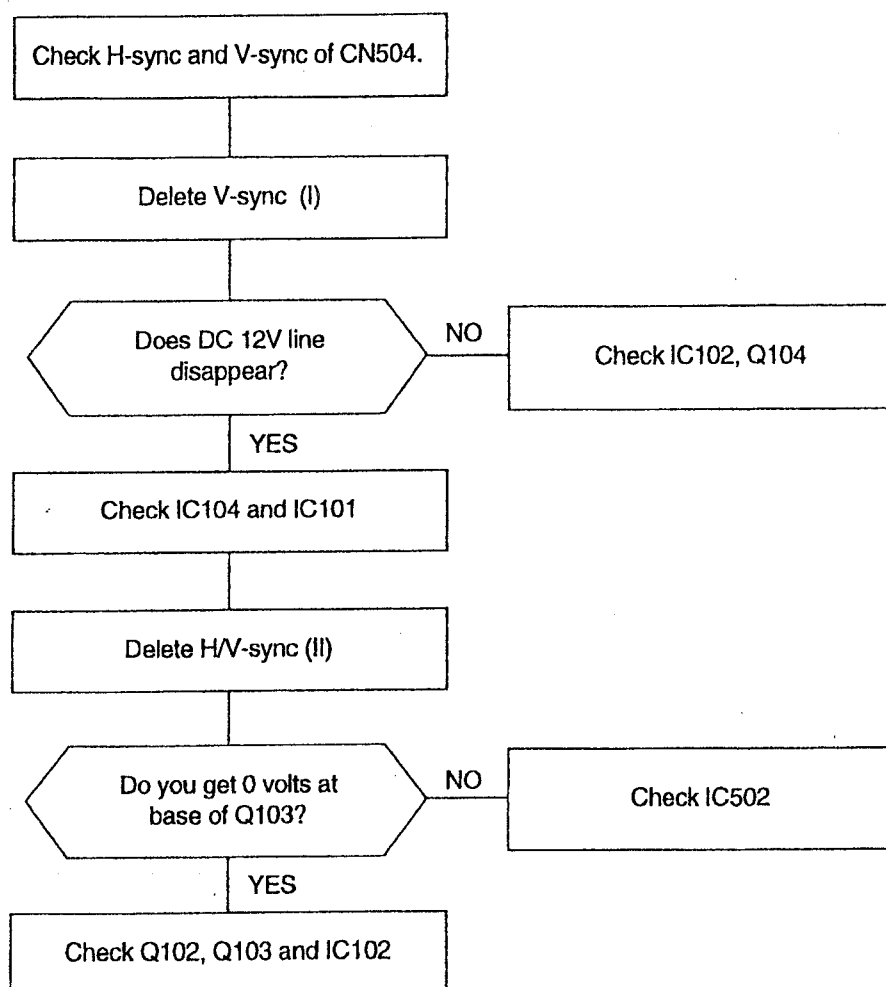
## 6-11 Color Purity Failure



# 6-12 Side Pin and Trapezoid Functions Do Not Operate

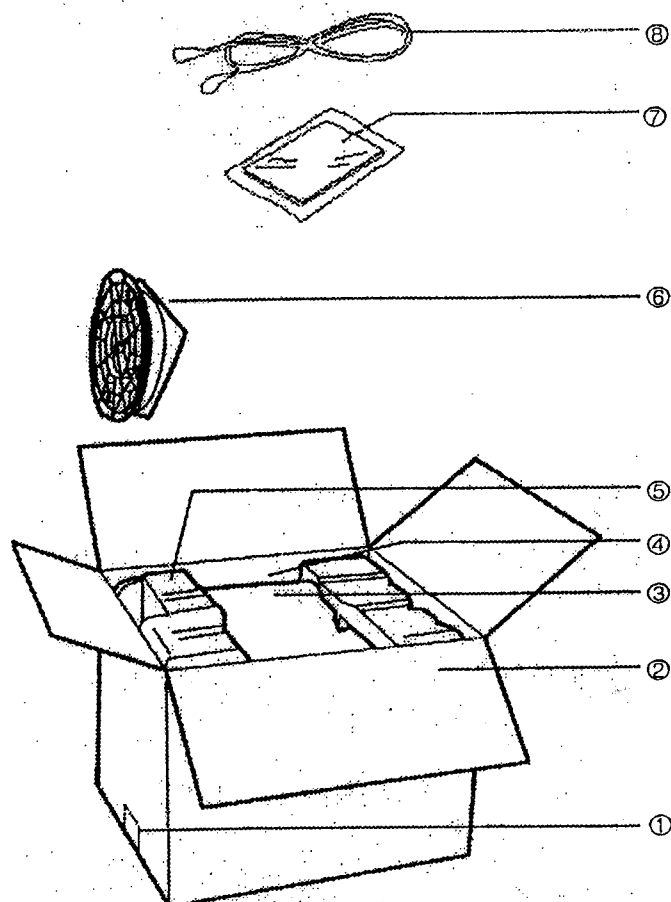


## 6-13 Power Save Mode Does Not Operate





## 7. Packing &amp; Unpacking

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No	Description	Specification	Quantity	Remarks
1	Masking Tape	OPP W75CLR	1.5Mt	-
2	Packing Case	D19AL	1EA	CB DW-3 Yellow
3	Set-Monitor, Color	D19AL	1Set	19" Color Monitor
4	PE-Bag	HDPE T=0.015	1EA	-
5	Cushion	D19AL	1Set	EPS 50M C=0.020
6	Stand Ass'y	D19AL	1EA	-
7	Manual Ass'y	D19AL	1EA	-
8	Power Cord	Refer to product spec	1EA	Detachable Type

# **PDB location**

LOCATION NO.	PART NO.	TYPE	DESCRIPTION
R336, R389, R504	214027253FTD	RES,METAL,AT	2.7K OHM, 1%, 1/8W
R117, R118	211022478ATD	RES,CARBON,AT	220K OHM, 5%, 1/2W
R121	211022474F	RES,CARBON,AT	220K OHM, 5%, 1/6W
R736	211022375F	RES,CARBON,AT	22K OHM, 5%, 1/4W
R344	214022353FTD	RES,METAL,AT	22K OHM, 1%, 1/8W
R718	211027475F	RES,CARBON,AT	270K OHM, 5%, 1/4W
R537, R502	211039274F	RES,CARBON,AT	3.9K OHM, 5%, 1/6W
R714	211039574FAH	RES,CARBON,AT	390K OHM, 5%, 1/6W
R388	211012374F	RES,CARBON,AT	12K OHM, 5%, 1/6W
R105, R180, R328, R506 R515, R519, R520, R521 R523, R524, R525, R526 R527, R528, R529, R550 R570, R571, R572, R573, R574, R575, R576, R577 R578, R579, R733, R737	211047274F	RES,CARBON,AT	4.7K OHM, 5%, 1/6W
R552, R509, R510, R709, R729	211051274F	RES,CARBON,AT	5.1K OHM, 5%, 1/6W
R122, R371	211068274F	RES,CARBON,AT	6.8K OHM, 5%, 1/6W
R382, R385	211075374ATD	RES,CARBON,AT	75K OHM, 5%, 1/6W
R282, R285	214010253FTD	RES,METAL,AT	1K OHM, 1%, 1/8W
R379	2114R7075ATD	RES,CARBON,AT	4.7 OHM, 5%, 1/4W
R753	211010578F	RES,CARBON,AT	1M OHM, 5%, 1/2W
R741	21301037BATD	RES,METAL,OXID E,AT	10K OHM, 5%, 1W
R740	21304707BATD	RES,METAL,OXID E,AT	47 OHM, 5%, 1W
R705	211015475ATD	RES,CARBON,AT	150K OHM, 5%, 1/4W
R104	211082474ATD	RES,CARBON,AT	820K OHM, 5%, 1/6W
R540	214024253FTD	RES,METAL,AT	2.4K OHM, 1%, 1/8W
R745	211010378FAH	RES,CARBON,AT	10K OHM, 5%, 1/2W
R343	214033353FTD	RES,METAL,AT	33K OHM, 1%, 1/8W
R724	213R3307BATD	RES,METAL,OXID E,AT	0.33 OHM, 5%, 1W
R369	2112R2078FAH	RES,CARBON,AT	2.2 OHM, 5%, 1/2W
R322	21303317CATD	RES,METAL,OXID E,AT	330 OHM, 5%, 2W
R376	21301047CATD	RES,METAL,OXID E,AT	100K OHM, 5%, 2W
R106	21301847BATD	RES,METAL,OXID E,AT	180K OHM, 5%, 1W
R735	214039255FTD	RES,METAL,AT	3.9K OHM, 1%, 1/4W
R725, R726	21301037EATD	RES,METAL,OXID E,AT	10K OHM, 5%, 3W
R130	211012478ATD	RES,CARBON,AT	120K OHM, 5%, 1/2W
R114, R390	211020375ATD	RES,CARBON,AT	20K OHM, 5%, 1/4W
R704	214056355FTD	RES,METAL,AT	56K OHM, 1%, 1/4W
R170	211033174ATD	RES,CARBON,AT	330 OHM, 5%, 1/6W
R325	211033178FAH	RES,CARBON,AT	330 OHM, 5%, 1/2W
R116	211033378BATD	RES,CARBON,AT	33K OHM, 5%, 1/2W
R730	214010355FTD	RES,METAL,AT	10K OHM, 1%, 1/4W
R334	21301007EA	RES,METAL,OXID E,AT	10 OHM, 5%, 3W
R539	214003353FTD	RES,METAL,AT	3K OHM, 1%, 1/8W
R391	211075174ATD	RES,CARBON,AT	750 OHM, 5%, 1/6W
R706	214010353FTD	RES,METAL,AT	10K OHM, 1%, 1/8W
R123	214002355FTD	RES,METAL,AT	2K OHM, 1%, 1/4W
R541	214047255FTD	RES,METAL,AT	4.7K OHM, 1%, 1/4W
R337	214060153FTD	RES,METAL,AT	600 OHM, 1%, 1/8W
R799, R279	211062274F	RES,CARBON,AT	6.2K OHM, 5%, 1/6W
R377	21105617AATD	RES,CARBON,AT	560 OHM, 5%, 1/6W
R342	211001078F	RES,CARBON,AT	1 OHM, 5%, 1/2W
R373	211010075F	RES,CARBON,AT 10	OHM, 5%, 1/4W
R112	211033478F	RES,CARBON,AT 330K	OHM, 5%, 1/2W
R183	2131R507CATD	RES,METAL,OXID E,AT	1.5 OHM, 5%, 2W
R124	211018174ATD	RES,CARBON,AT	180 OHM, 5%, 1/6W
R720	21106R875ATD	RES,CARBON,AT	6.8 OHM, 1/4W, 5%

## 11-3 Electrical Parts List

LOCATION NO.	PART NO.	TYPE	DESCRIPTION
IC102	15317812JAAD	IC, LINEAR	KA78R12, TO-220F, LOW DROPOUT VOLTAGE REGULATOR 1A/12V 4PIN
IC501	16624C08AAKF	IC, MEMORY, EEPR OM(2.7V-5.5V, (DIP)	AT24C08(10PC, 2.7), 24LC08B/P, S524C80D81-DOBO, M24C08-WIN6
IC103, IC141	375208171APN	OPTO ELECTRONIC	OPTO ISOLATOR, LTV-817M-SM
IC302	15714856AAAF	IC, LINEAR	Rev.03, TDA4856, 32DIP, AUTOSYNC DEFLECTION CONTROLLER
IC105	15210431TA	IC, LINEAR	KA431AZTA/TL431CLPR, TO-92 TAPING, REGULATOR
IC701	15710494AA	IC, LINEAR	TL494/KA7500B, 16DIP, PWM CONTROLLER
IC503	15217042TA	IC, LINEAR	KIA7042P/KA7542Z, RESET
IC702	15110358AAAD	IC, LINEAR	KA358, DUAL OPERATIONAL AMPLIFIERS, 8PIN DIP
IC303	15713843AAAD	IC, LINEAR	KA3843, CURRENT MODE PWM CONTROLLERS 8PIN DIP
IC142	15510254AAAF	IC, LINEAR	Rev.01, TNY254P, 8PIN, EcoSmart, Integrated, SWITCHER FOR E-2000
IC401	15112ASPAAAF	IC, LINEAR	M52742ASP, 36PIN, VIDEO PREAMPLIFIER
IC403	15912412JAAF	IC, LINEAR	LM2412T, 11TO-220, Monolithic triple 2.8 ns CRT Driver
IC406	15110324AA	IC, LINEAR	KA324, OP AMP, 14DIP
IC402	157145P2AAAF	IC, LINEAR	MC141545P2A, 16PIN, OSD IC
IC104	15711265JAAD	IC, POWER	KA5S1265/DP308P, 650V, 0.9 $\mu$ , 12A, TO-3P
IC502	14116890AACF	IC, $\mu$ PROCESSOR	MC68HC908BD48B, 8bit, OTP 42Dip, MOTOROLA
IC301	15715452AAAF	Bipolar Linear ICs	AN5452, Deflection Processing/Vertical
IC101	15317805KA	IC, LINEAR	Rev.01, KA7805, 5V, REGULATOR
IC201	15718172AAAF	IC, LINEAR	TDA8172, 7SIP, VERT.DEFLECTION OUTPUT
R184, R271, R277	21300107BF	RES, METAL, OXID E, AT	1 OHM, 5%, 1W, 63MM
R374	2131R207EATD	RES, METAL, OXID E, AT	1.2 OHM, 5%, 3W
R275	2111R5078ATD	RES, CARBON, AT	1.5 OHM, 5%, 1/2W
R366	211010078F	RES, CARBON, AT	10 OHM, 5%, 1/2W
R360	211022075F	RES, CARBON, AT	22 OHM, 5%, 1/4W
R326, R327	211033078ATD	RES, CARBON, AT	33 OHM, 5%, 1/2W
R101	211047075F	RES, CARBON, AT	47 OHM, 5%, 1/4W
R370	211075075ATD	RES, CARBON, AT	75 OHM, 5%, 1/4W
R313, R323	211010178FAH	RES, CARBON, AT	100 OHM, 5%, 1/2W
R532	211010175F	RES, CARBON, AT	100 OHM, 5%, 1/4W
R330, R347, R348, R372 R394, R395, R396, R518, R507, R511, R530, R531, R538, R543, R544, R545, R546, R734, R738	211010174F	RES, CARBON, AT	100 OHM, 5%, 1/6W
R324	21302217EF	RES, METAL, OXID E, AT	220 OHM, 5%, 3W
R143, R125, R508, R126	211022174F	RES, CARBON, AT	220 OHM, 5%, 1/6W
R119	211027175F	RES, CARBON, AT	270 OHM, 5%, 1/4W
R276	21303317BATD	RES, METAL, OXID E, AT	330 OHM, 5%, 1W
R514	211039175F	RES, CARBON, AT	390 OHM, 5%, 1/4W
R723	211047174F	RES, CARBON, AT	470 OHM, 5%, 1/6W
R283, R284	214150153F	RES, METAL, AT	1.5K OHM, 1%, 1/8W
R110	211010478FAH	RES, CARBON, AT	100K OHM, 5%, 1/2W
R278	211010375ATD	RES, CARBON, AT	10K OHM, 5%, 1/4W
R742	211015478F	RES, CARBON, AT	150K OHM, 5%, 1/2W
R708, R744	211018478ATD	RES, CARBON, AT	180K $\mu$ , 5%, 1/2W
R331, R384	211024274ATD	RES, CARBON, AT	2.4K OHM, 5%, 1/6W
R108, R181, R542, R715 R717, R751, R770	211010274F	RES, CARBON, AT	1K OHM, 5%, 1/6W
R383, R722	211075274ATD	RES, CARBON, AT	7.5K OHM, 5%, 1/6W
R182, R346, R389-1	211047374F	RES, CARBON, AT	47K OHM, 5%, 1/6W
R341, R505, R707, R711	211010275F	RES CARBON, AT	1K OHM, 5%, 1/4W
R111, R340	211022274F	RES, CARBON, AT	2.2K OHM, 5%, 1/6W

# PDB Location

LOCATION NO.	PART NO.	TYPE	DESCRIPTION
R402,R404,R406,R420	211047074F	RES,CARBON,AT	47 OHM, 5%, 1/6W
R409,R410,R416,R435, R438,R441,R443,R449, R465,R466	211010174F	RES,CARBON,AT	100 OHM, 5%, 1/6W
R454,R455,R456	211010175F	RES,CARBON,AT	100 OHM, 5%, 1/4W
R414	211047274F	RES,CARBON,AT	4.7K OHM, 5%, 1/6W
R502A	211068274F	RES,CARBON,AT	6.8K OHM, 5%, 1/6W
R501A	211020274F	RES,CARBON,AT	2K OHM, 5%, 1/6W
R354,R353	21306807EATD	RES,METAL,OXIDE,AT	68 OHM,5%,3W
R358	2136R807EATD	RES,METAL,OXIDE,AT	6.8 OHM, 5%, 3W
R107	21306827EATD	RES,METAL,OXIDE,AT	6.8K OHM,5%,3W
R363	2132R207EATD	RES, METAL OXIDE, AT	2.2 OHM, 5%, 3W
R710	21B03307JZBD	RES,CERAMIC,CEMENT	33 OHM,5%,7W,RQP-TYPE,50Vmax
D308	3512000391TF	DIODE,RET	UG1B,Ultrafast Efficient Plastic,100V,1A
D143,D305,D703	35190002	DIODE, RET	1SS244/BAV21,0.25A,250V, GP, AT
D142,D201	35314002AA	DIODE, RET	1N4002GP,1A,100V, GP
D720	3531001492TD	DIODE, ZEN	MTZJ 5.1B/UZ-5.1BSB, 5.1V, 5mA, 500mW,T-72, AT
D109	3531001392TD	DIODE, ZEN	MTZJ 4.7B/UZ-4.7BSB, 4.7V, 5mA, 500mW,T-72, AT
D104,D106,D312	3512570191TD	DIODE,FR	UF1G-5704,400V,1.2A,52mm,AMMO PACK
D107,D108,D110,D141, D315,D317,D318,D711, D103,D105,D311,D706, D714,D715,D704	35390007AA	DIODE, RET	UF4004,1A,400V,50NS, FR, AT
	35390008AA	DIODE, RET	UF4007, 1A, 1000V, 75NS, FR, AT
D131	3552020091TD	DIODE, TVS	P6KE200A, 210V max, 2.2A max, AT
D101,D115,D116,D313, D314,D319,D320,D321, D322,D145,D502,D503, D504,D513,D514,D701, D702,D707,D709,D712, D716,D717,D719,D721, D722,D796,D798,D799	35114148	DIODE, SW	Rev.01, 1N4148,75V, 200mA, 500mW, AT
D506,D507,D508,D509, D510,D511,D512,D550	3531001592TD	DIODE, ZEN	Rev.01, MTZJ 5.6B/UZ-5.6BSB/1N5232B,5.6V, 5mA, 500mW,T-72,AT
D505	3531002092TD	DIODE, ZEN	MTZJ 10B/UZ-10BSB, 10V, 5mA, 500mW,T-72, AT
D304	3531000992TD	DIODE, ZEN	MTZJ 2.7B/UZ-2.7BSB, 2.7V, 5mA, 500mW,T-72, AT
D400,D401,D402,D403, D404,D405,D406,D407, D418,D419	35114148	DIODE, SW	Rev.01, 1N4148,75V, 200mA, 500mW, AT
D408,D409,D410,D411, D412,D413,D414,D415,D416	35190002	DIODE, RET	1SS244/BAV21,0.25A,250V, GP, AT
D309	3512010F92TD	DIODE,DAMPER	FFPF10F150S,1500V,10A,Trr170ns,TO-220F
D130	35390016AA	DIODE, RET	GBL06, 6A, 800V, BR, FORMING
D114	3512RG4C92BF	DIODE, RET	RG4C,Ultrafast Rectifier,1000V,2.0A,3.0V,GLASS,100ns
D708,D710	3512G46091TF	DIODE, FR	GUR460L-5702,600V,4.0A,ULTRAFAST PLASTIC RECTIFIER,FORMING
D112-1,D112-2	3512310699BF	DIODE, FR	31DF6-FC,600V,35ns,20uA,1.7V N.I
D417	35314937AA	DIODE, RET	1N4937GP, 1A,600V, FR
D102	3512UG4D91BF	DIODE, RET	UG4D,Ultrafast Plastic Rectifier,Straight Type,BULK
D144	3531001792TD	DIODE, ZEN	MTZJ 7.5B/UZ-7.5BSB, 7.5V, 5mA, 500mW,T-72, AT
D302,D303,D705	35314937AA	DIODE, RET	1N4937GP, 1A,600V, FR
D501A	3541290368TF	DIODE, LED	LTL-368DJW-012/HB4-31YG-TRS,5V,100mW(G), 60mW(Y),475mm,TAPING
Q707	30390002AA	TR, NPN	KSP2222A,TO-92,625mW,75V,40V,RT,600mA
Q144,Q120,Q314,Q320	30140733AA	TR, PNP	KSA733,60V,250mW,150mA,TO-92,Y,RT
Q102,Q103,Q143,Q302, Q304,Q306,Q308,Q310, Q316,Q501,Q704,Q709,Q710	30360945AA	TR, NPN	KSC945/KTC9014B,TO-92,250mW, 60V,50V,Y,RT,0.15A
Q410,Q409,Q408	30325551AA	TR, NPN	Rev.01, 2N5551,TO-92,625mW,180V,160V,RT,0.2A

LOCATION NO.	PART NO.	TYPE	DESCRIPTION
R273,R281	214018253FTD	RES,METAL,AT	1.8K OHM,1%,1/8W
R380,R716	211033474F	RES,CARBON,AT	330K OHM, 5%, 1/6W
R748	211056178ATD	RES,CARBON,AT	560 OHM, 5%, 1/2W
R280,R713	211082274F	RES,CARBON,AT	8.2K OHM, 5%, 1/6W
R362,R712,R728	211056274F	RES,CARBON,AT	5.6K OHM, 5%, 1/6W
R749	211012178ATD	RES,CARBON,AT	120 OHM, 5%, 1/2W
R721,R752	211015274F	RES,CARBON,AT	1.5K OHM, 5%, 1/6W
R732	214019455FTD	RES,METAL,AT	191K OHM, 1%, 1/4W
R301,R305,R309,R314 R318, R386, R398	211018374F	RES,CARBON,AT	18K OHM, 5%, 1/6W
R142,R302,R307,R310 R315, R319, R333, R345	211010474FAH	RES,CARBON,AT	100K OHM, 5%, 1/6W
R501	211010674ATD	RES,CARBON,AT	10M OHM, 5%, 1/6W
R503	211020274F	RES,CARBON,AT	2K OHM, 5%, 1/6W
R128,R303,R304,R306 R308, R311, R312, R316, R317, R320, R321	211012274FAH	RES,CARBON,AT	1.2K OHM, 5%, 1/6W
R149	211047074F	RES,CARBON,AT	47 OHM, 5%, 1/6W
R145,R146	214047455FTD	RES,METAL,AT	470K OHM,1%,1/4W
R147	211075275ATD	RES,CARBON,AT	7.5K OHM,5%,1/4W
R144	211068275ATD	RES,CARBON,AT	6.8K OHM, 5%, 1/4W
R113	211018075ATD	RES,CARBON,AT	18 ohm,5%,1/4W
R141	211015278F	RES,CARBON,AT	1.5K OHM, 5%, 1/2W
R109	211039178ATD	RES,CARBON,AT	390 OHM,5%,1/2W
R750	211010475FAH	RES,CARBON,AT	100K OHM, 5%, 1/4W
R274	214068253FTD	RES,METAL,AT	6.8K OHM, 1%, 1/8W
R703	211056374F	RES,CARBON,AT	56K OHM, 5%, 1/6W
R103,R129,R517,R72	7211010374F	RES,CARBON,AT	10K OHM, 5%, 1/6W
R381	211022374F	RES,CARBON,AT	22K OHM, 5%, 1/6W
R419,R428,R430,R431, R445,R467,R468,R471, R472,R474,R475,R478, R479,R481,R482,R485,R486	211010374F	RES,CARBON,AT	10K OHM, 5%, 1/6W
R484,R477,R470,R446	211010474FAH	RES,CARBON,AT	100K OHM, 5%, 1/6W
R487,R480,R473	211022574ATD	RES,CARBON,AT	2.2M OHM, 5%, 1/6W
R408	211030374ATD	RES,CARBON,AT	30K OHM, 5%, 1/6W
R412	211024274ATD	RES,CARBON,AT	2.4K OHM, 5%, 1/6W
R413	211010574F	RES,CARBON,AT	1M OHM, 5%, 1/6W
R426	211056274F	RES,CARBON,AT	5.6K OHM, 5%, 1/6W
R425	211022374F	RES,CARBON,AT	22K OHM, 5%, 1/6W
R427	211018374F	RES,CARBON,AT	18K OHM, 5%, 1/6W
R433	211015374FAH	RES,CARBON,AT	15K OHM, 5%, 1/6W
R434,R437,R440	211039174F	RES,CARBON,AT	390 OHM, 5%, 1/6W
R450	211056375ATD	RES,CARBON,AT	56K OHM, 5%, 1/4W
R451,R452,R453,R457, R458,R459	211027475F	RES,CARBON,AT	270K OHM, 5%, 1/4W
R460,R461,R462	211047078F	RES,CARBON,AT	47 OHM, 5%, 1/2W
R464	211010178FAH	RES,CARBON,AT	100 OHM, 5%, 1/2W
R429	211015274F	RES,CARBON,AT	1.5K OHM, 5%, 1/6W
R448	211022074ATD	RES,CARBON,AT	22 OHM, 5%, 1/6W
R483,R476,R469	211027474FAH	RES,CARBON,AT	270K OHM, 5%, 1/6W
R463	211R50078ATD	RES,CARBON,AT	0.5 OHM, 5%, 1/2W
R401,R403,R405	214075053FTD	RES,METAL,AT	75 OHM, 1%, 1/8W
R447	211020274F	RES,CARBON,AT	2K OHM, 5%, 1/6W
R417,R421,R422,R423,R424	211010274F	RES,CARBON,AT	1K OHM, 5%, 1/6W
R415,R432	211022274F	RES,CARBON,AT	2.2K OHM, 5%, 1/6W
R411,R418	211027274F	RES,CARBON,AT	2.7K OHM, 5%, 1/6W
R407	211039274F	RES,CARBON,AT	3.9K OHM, 5%, 1/6W

LOCATION NO.	PART NO.	TYPE	DESCRIPTION
C378	23160223BACH	CAP,IND-POLYESTER	0.022UF, 100V, 10%, -40/80° C, RT
C104,C282,C324	23110333BATD	CAP,IND-POLYESTER	0.033uF,100V, ±10%,RT
C330,C369	23160473B9CH	CAP,IND-POLYESTER	0.047uF, 100V, 10%, RT
C310	23160152B9CH	CAP,IND-POLYESTER	1500PF, 100V, 5%, -40/80° C, RT
C120	23160472B9CH	CAP,IND-POLYESTER	0.0047UF, 100V, 10%, -40/80° C, RT
C374	23320102B8TD	CAP,POLYPROPYLENE	1000pF,100V, ±3%, -25/85°C, KPL,5mm,RT
C770	2341FA0104TD	CAP,METALZ-POLYESTER	Rev.01, 0.1uF,250V, ±10%,-40/80° C,DMEU(230S),5.0mm,RT*
C332	23520104F9TD	CAP,METALZ-POLYPRO	0.1uF,250V,5%,-25/85° C,KMP,7.5mm,RT
C313	277501083CAH	CAP AL-ELECT G.P	1000uF,16V,20%,-40/85° C,5.08mm,10*20,RT
C271	277501085CAH	CAP AL-ELECT G.P	1000uF,25V,20%,-40/85° C,5.08mm,13*20,RT
C128	27750107BCAH	CAP,AL-ELECT,G.P	100uF,100V,20%,-40/85° C,5.08mm,13*20,RT
C141,C703,C715,C718,C124	277501073CAH	CAP,AL-ELECT,GP	100uF,16V,20%,-40/85° C,5.08mm,6.3*11,RT
C318	277501078CAH	CAP AL-ELECT,G.P	100uF,50V,20%,-40/85° C,5.08mm,8*11.5,RT
C143,C372,C501,C506, C508,C513	277501068CAH	CAP AL-ELECT.G.P	10uF,50V,20%,-40/85° C,5.08mm,5*11,RT
C723	27750106FCAH	CAP,AL-ELECT,GP	10uF,250V,20%,-40/85° C,5.08mm,10*20/16,RT
C726	27120105BCHD	CAP,AL-ELECT,G.P	1uF,100V, ±20%,-40/85° C,5.0mm,5 x 11,RT
C130,C283,C379,C724	277501058CAH	CAP AL-ELECT,GP	1uF,50V,20%,-40/85° C,5.08mm,5*11,RT
C101,C142,C312,C395,C502	277502273CAH	CAP,AL-ELECT,GP	220uF,16V,20%,-40/85° C,5.08mm,8*11.5,RT
C280	271202276CHD	CAP,AL-ELECT,G.P	220uF,35V, ±20%-40/85° C,5.0mm,10 x 12.5,RT
C722	277503358CAH	CAP AL-ELECT G.P	3.3uF,50V,20%,-40/85° C,5.08mm,5*11,RT
C117,C550	277503368CAH	CAP AL-ELECT,G.P	33uF,50V,20%,-40/85° C,5.08mm,6.3*11,RT
C307,C509,C507,C505,C720	277504758CAH	CAP AL-ELECT G.P	4.7uF,50V,20%,-40/85° C,5.08mm,5*11,RT
C370	271204765CHD	CAP, AL-ELEC,GP	47uF,25V, ±20%,-40/85° C,5.08mm,(6.3X11) RT
C102,C272	277404775CAH	CAP AL-ELECT,GP	470uF,25V,20%,-55/105° C,5.08mm,10*16,RT
C510	277500158CHD	CAP,AL-ELECT,GP*	0.1uF,50V,20%,-40/85° C,5.08mm,5*11,RT
L112,L309	3421260018TD	COIL,AXIAL,INDUCTOR	4.7uH, ±10%,AL04T,AT
VR301	221201017ABD	Volume, HORI.NO-HANDLE	100 OHM,30%,0.1W
C107,C108	2631JC0228ZD	CAP, DISC, CERAMIC	2200pF, AC250V, E, 20%, -25/85° C, 7.5mm, RT
C709	27750225KCHD	CAP,AL-ELECT,GP	2.2uF,450V,20%,-40/85° C,5.08mm,10*20/16,R
C316	272202258CHD	CAP,AL-ELECT,B.P	2.2uF,50V, ±20%,-40/85° C,5.08mm5*11
C386	23520274F9TD	CAP,METALZ- POLYPROPYLENE	0.27uF,250V, ±5%,-25/85° C,KMP,7.5mm,RT
C387	23520474F9TD	CAP,METALZ- POLYPROPYLENE	0.47uF,250V, ±5%,-25/85° C,MKP/KMP,7.5mm,RT
C303	23560103B9CH	CAP,POLYPROPYLENE	0.01UF, 100V, 5%, -25/85° C, KPL, 5mm, RT
C721	272203358CHD	CAP,AL-ELECT,B.P	3.3uF,50V, ±20%,-40/85° C,5.0mm,5 x 11,RT
C706	2631RA01521D	CAP,DISC,CERAMIC	1500pF,2KV,B,10%,-25/85° C,5.0mm,RT
C504	2631033089EH	CAP,DISC,CERAMIC,CC	33pF, 50V, CH, 5%, -25/85° C, 5.0mm, RT
C503	2631010089EH	CAP,DISC CERAMIC	10pF, 50V, CH, 5%, -20/80° C, 5.0mm, RT
C129,C717	27750227BCFD	CAP,AL-ELECT,GP	220uF,100V,20%,-40/105° C,7.5mm,16*25,RT
C131,C309,C118,C730	23160104BACH	CAP,IND-POLYESTER	0.1UF, 100V, 10%, -40/85° C, RT
C277,C279,C301	23110682B9TD	CAP,IND-POLYESTER	6800pF,100V, ±5%,-40/80° C,RT
C729	26318906805D	CAP,DISC,CERAMIC,CC	68PF,50V,CH,5%, -25/85° C
C111,C278,C315,C708 C728,C732	23560224BACH	CAP,METALZ-POLYESTER	0.22UF, 100V, 10%, -55/100° C, 5.0mm, RT
L105,L110,L111,L701	3421260017TD	COIL,AXIAL,INDUCTOR	33uH, ±10%,AL04T,AT
L708	3421260018TD	COIL,AXIAL,INDUCTOR	220uH, ±10%,ALO4T,AT
C304	23660124F9CH	CAP,METALZ- POLYPROPYLENE	0.12UF, 250V, 5%, -25/85° C, KMP, 7.5mm, RT
J500A,J501A	44504701AA	WIRE,LEAD	TIN ANNEALING DIPPED COPPER WIRE, CU+SN+PB,0.6I
C397	26370101QAEH	CAP DISC CERAMIC, CK	100pF, 2KV, B, 10%, -25/85° C, 5.0mm, RT
C734-1	263101518ATD	CAP,DISC,CERAMIC,CC	150pF, 50V, B, ±10%,-25/85° C, 5.0mm, RT
SC701	38130001	CAP,SPARK-GAP	Rev.01, 1KV,S-23
CN407	4623050003WD	CONNECTOR, CRT SOCKET	Rev.02, ø29 DUAL-FOCUS,ISDS11S-P/PCS 026D,10PIN

LOCATION NO.	PART NO.	TYPE	DESCRIPTION
Q401,Q402,Q403,Q404	30325770AA	TR, NPN	2N5770, TO-92, 500mW, 30V, 15V, RT
Q502, Q708	30323904TAYD	TR, NPN	2N3904Y, TO-92, 625mW, 40V, 0.2A
Q705	30123906TAYD	TR, PNP	Rev.01, 2N3906Y/2N3906, TO-92, 40V, 625mW, 0.2A
Q714	30325551AA	TR, NPN	Rev.01, 2N5551, TO-92, 625mW, 180V, 160V, RT, 0.2A
Q701	30126520AA	TR, PNP	2N6520, 350V, 625mW, 500mW, TO-92, RT
Q121	30391116TAAD	TR, PNP	KSB1116, 60V/50V, 0.75W, 1A, TO-92, PNP, 60V
Q101	30361008AA	TR, NPN	Rev.01, KSC1008/MPS651, TO-92, 800mW, 80V, 60V, Y, RT, 0.7A
Q711	30390003AA	TR, NPN	Rev.01, KSP44/MPSA44, TO-92, 625mW, 500V, 500V, RT, 300mA
Q406	30140733AA	TR, PNP	KSA733, 60V, 250mW, 150mA, TO-92, Y, RT
Q405, Q407	30360945AA	TR, NPN	KSC945/KTC9014B, TO-92, 250mW, 60V, 50V, Y, RT, 0.15A
Q712	30490029QBZD	TR, polar, NPN	TIP-29, MEDIUM POWER LINEAR SWITCHING APPLICATIONS, TO-220
Q713	30490030QBZD	TR, Bipolar, NPN	TIP-30, MEDIUM POWER LINEAR SWITCHING APPLICATIONS, TO-220
Q706	30682141QZZF	TR, FET	2SK2141, MP-45F, 600V, 40W, 3.0A, BULK
Q315	30890002AA	FET, N	IRF610A, TO-220, 3.6W, 200V, 3.3A, BULK
Q313	0821690015AA	SUB ASS'Y, H/SINK	MONITOR, D19AL(920D), 2SC5584+SDS10F150S 2.0"150"75"15.E-2000"
Q313	30465584QZZF	TR, NPN	Rev.01, 2SC5584, TOP-3L, 150W, 20A, 1500V/600V, BULK
Q307	30890001AA	FET, N	IRF640A, TO-220, 125W, 200V, 18A, BULK
FC101, FC102	52260001	FUSE CLIP	FC51F/AFC-520, FUSE 5.20mm, CLIP
C701, C702	271204769CJD	CAP, AL-ELEC, G.P.	47uF, 63V, 20%, -40/85°C, 8X11.5, 5.0mm, RT
C713	23110563BATD	CAP, IND-POLYESTER	0.056uF, 100V, ±10%, -40/85°C, RT
C375, C712	2631MA0331RD	CAP, DISC, CERAMIC	330pF, 500V, 10%, -25/85°C, RT
C305, C333, C376	26370102MAEH	CAP, DISC, CERAMIC, CK	1000pF, 500V, B, 20%, -20/85°C, 5.0mm, RT
C727	26370102PAEH	CAP, DISC, CERAMIC, EK	1000pF, 1KV, B, 10%, -25/85°C, 5.0mm, RT
C392, C393	2340990474TD	CAP, METALZ-POLYESTER	0.47uF, 63V, 5%, -55/100°C, 5.0mm, RT
C705	271202268CHD	CAP, AL-ELECT, G.P.	22uF, 50V, ±20%, -40/85°C, 5.0mm, 5 x 11, RT
C119, C394	27750476FCAH	CAP AL-ELECT G.P.	47uF, 250V, 20%, -40/85°C, 7.5mm, 16"25, RT
C398	2330B90033TD	CAP, POLYPROPYLENE	0.0033uF, 100V, KPL, 5%, -25/85°C, 5mm, R
C121	2311BA0023TD	CAP, IND-POLYESTER	0.002uF, 100V, 10%, -40/80°C, RT
C325	2311BA0273TD	CAP, IND-POLYESTER	0.027uF, 100V, 10%, -40/80°C, RT
C331, C385	2380F90683TD	CAP, METALZ-POLYPROPYLENE	0.068 uF, 250V, 5%, -25/85°C, RT
C711	2351Q90701TD	CAP, METALZ-PE, POLYPROPYLENE	700pF, 1.6KV, 5%, -25/85°C, RT
C319, C320	2380T90023TD	CAP, METALZ-POLYPROPYLENE	0.002uF, 2.5KV, 5%, -25/85°C, SMP
C106, C116	277501083CHD	CAP, AL-ELECT, GP	1000uF, 16V, 20%, -40/105°C, 5.08mm, 10"20, RT
C109, C115, C127	277504776CHD	CAP, AL-ELECT, GP	470uF, 35V, 20%, -40/105°C, 5.8mm, 10"20, R
C148, C112, C123, C336	26370103MAEH	CAP, DISC, CERAMIC, CK	0.01uF, 500V, +80/-20%, -25/85°C, RT
C377	26318A06817D	CAP, DISC CERAMIC CC	680pF, 50V, B, 10%, -25/85°C, 5.0mm, RT
C373, C716	26318A01037D	CAP, DISC, CERAMIC, CC	0.01uF, 50V, F, +80/-20%, -25/85°C, 5.0mm, RT
C314, C334, C335, C371, C514, C515, C704, C707, C731	263101048AEH	CAP, DISC, CERAMIC, CK	0.1uF, 50V, F, +80/-20%, -25/85°C, 5.0mm, RT
C275	26318A01027D	CAP, DISC, CERAMIC, CC	1000pF, 50V, B, 10%, -25/85°C, 5.0mm, RT
C144	2641PA0101RD	CAP, DISC CERAMIC, CK	100pF, 1KV, B, 10%, -28/85°C, 5.0mm, RT
C114, C725, C302	2631PA0221RD	CAP, DISC, CERAMIC	220pF, 1KV, B, 10%, -25/85°C, 5.0mm, RT
C274, C276, C281	263104718ATD	CAP, DISC, CERAMIC, CC	470pF, 50V, B, 10%, -25/85°C, 5.0mm, RT
C145, C719	23560104B9CH	CAP METALZ-POLYESTER	0.1uF, 100V, 5%, -40/80°C, DMEU, 5mm, RT
C311	23560104BACH	CAP, METALZ-POLYESTER	0.1uF, 100V, 10%, -55/100°C, 5.0mm, RT
C122, C710	2311BA0153TD	CAP, IND-POLYESTER	0.015uF, 100V, 10%, -40/80°C, RT
C321, C714	23160103BACH	CAP, IND-POLYESTER	0.01uF, 100V, 10%, -40/80°C, RT

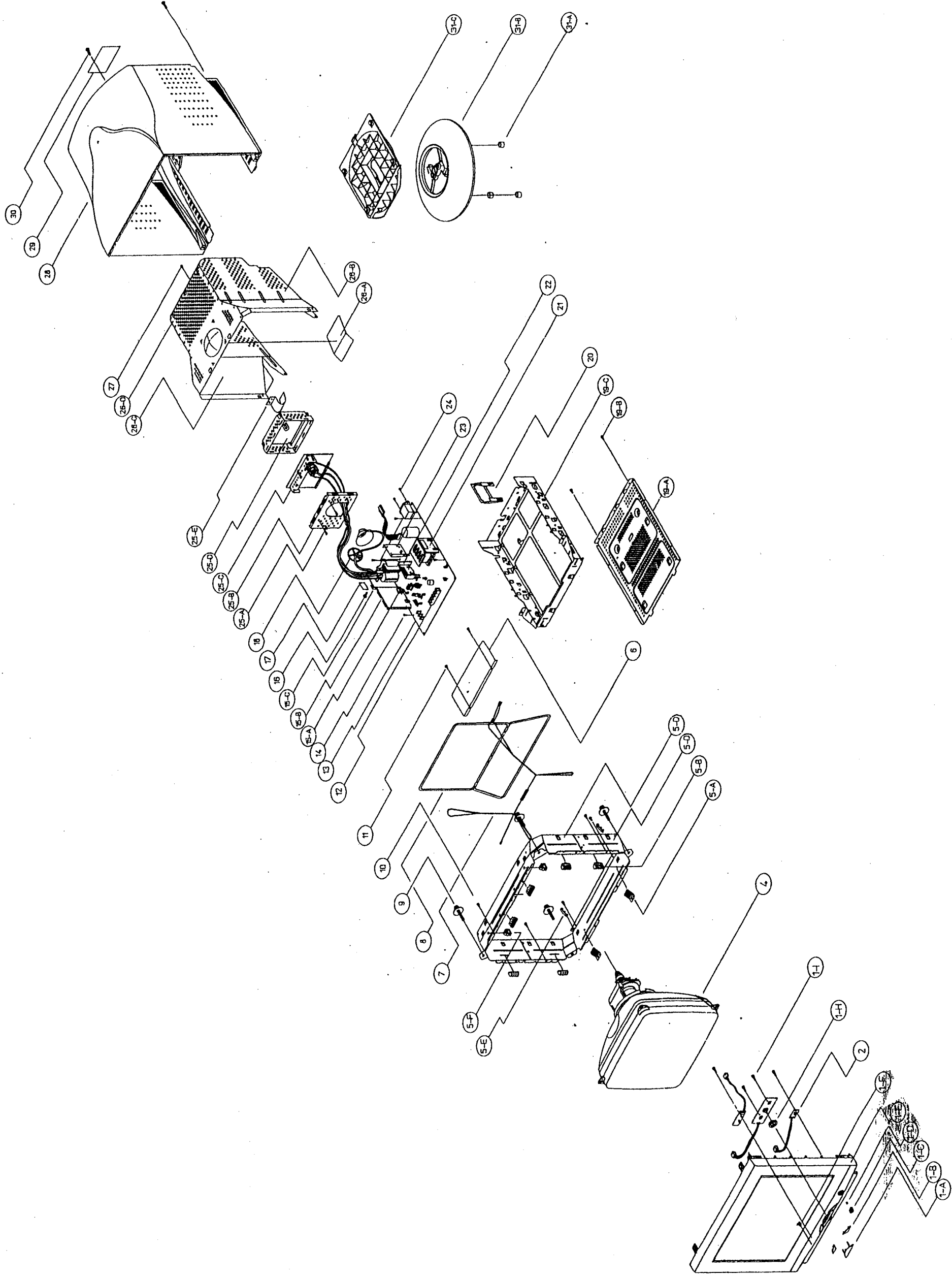
# PDB location

LOCATION NO.	PART NO.	TYPE	DESCRIPTION
F101	50510002	FUSE, MINIATURE CERAMIC TUBE	TIME LAG, 50CT, 3.15A, UL/CSA/VDE
C388	2352F90824BD	CAP, METALZ- POLYPROPYLENE	0.82uF, 250V, 5%, -25/85°C, KMP, 20 mm, RB
SW501A, SW502A	58210001	SWITCH, TACT	THV702GAA, 2P, RESET S/W, DC 12V, 50mA, 8.5MM-10.0MM, TAPING
SW503A	58220003RAAD	SWITCH, ENCODER	Rev.01, ENC:15Pulses/360° EACH PHASE(1CLICK 1Pulse)
SW504A	58130004AAAD	PUSH SWITCH	JPS2281SV0(SELF-LOCK), FULL:2.5, LOCK:1.5
CN501A	4612110005ID	CONNECTOR	OPEN HEADER, 4PIN, 2.5mm, MALE, R/A, SMAW250-04
CN503A	4623110001RD	CONNECTOR, SURROUNDED HEADER	3PIN, 2.5mm, MALE, R/A, SMAW250-03
CN502A	4623150005KD	CON, SHROUNDED	6PIN DUAL TYPE, 2mm PICH, MALE S/T, YDW200-06, BULK
TH102	38110011AAAD	NTC	4.7 OHM, DISC $\phi$ 13, MAX 5A, DSC-4.7D-13, $\pm$ 15%, LONG LEAD
CN505	4622150002WD	CON, SHROUNDED HEADER	4PIN, 2.5mm, MALE, S/T, SMW250-04
T141	3321230002GD	TRANS, DPMS	Rev.01, 710D/920D, E-2000, IND:1.6mH, DC/RES:Max 1.35 Ohm, 10PIN
CN105	4623150005KD	CON, SHROUNDED HEADER	6PIN DUAL TYPE, 2mm PICH, MALE S/T, YDW200-06, BULK
C150	2682JC0472RD	CAP, DISC CERAMIC, AD	4700pF, 400V, E, 20%, -25~+85°C, 10.0mm, RB
CN503	4921130010WD	HARNESS, VIDEO POWER CONN' WIRE ASS'Y	Rev.02, 330 $\pm$ 10mm, UL 1007AWG, 14PIN, 13PIN, E-2000
T303	3321210005GD	TRANS, SCAN	720NF, IND:1.0mH/92uH/0.66uH DC/RES:1.20 $\Omega$ /0.32 $\Omega$ /0.035 10PIN
G2, FBT Focus WIRE (RED, WHITE)	3421420002BD	COIL, RING, CORE	EP1812C, 18.2 x 12.0 x 9.6, 65 g
CN301 (CN301-1, CN301-2, CN301-3, CN301-4)	4625150001ID	CONNECTOR, PIN HEADER, MALE, ST (LV CONN)	4PIN, 8.0 $\pm$ 0.1, 10 $\pm$ 0.1, $\phi$ 2.36 $\pm$ 0.03, B4P-LV-TA
E01, E02, E03, E04, E05, E06, E07, E08	74120015AA	EYELET, DIA1.5	1.5, 2.0, 3.0, 0.2t, BRASS, Sn
T1	3421150023BD	PFC Coil (Hybrid Choke Coil)	Rev.02, HCA209-050A, $\phi$ 0.5, 286 $\pm$ 3T, 920D MAXDATA
CN1, CN2	4622150003WD	CONNECTOR, LOCK HEADER	YW396-03AV, 2PIN, 7.92mm, PIN BASE, MALE, ST, BULK
C113	2380GA0473BD	CAP, METALZ- POLYPROPYLENE	0.047UF, 275VAC, 10%, 85°C, MKP, 15mm, PCX2 335M, RB
E5-E9, E12-E18, E21-E22, E29-E30,	74120015AA	EYELET, DIA1.5	1.5, 2.0, 3.0, 0.2t, BRASS, Sn
E1-E4, E10-E11, E19-E20, E50-E55	74120022AA	EYELET, DIA2.2	E2.2, IN, DIA 2.2
L101, L102, L103, L104, L106, L107, L108, L109, L143, L306, L307, L308, L501, L705, L706, L707	3421410001TD	COIL, BEAD, CORE	100 $\Omega$ , BFS3565A0LD8 / ATS3565L(90 $\Omega$ ), AT
J1-J38, J40-J44, J101- J212, J214, J216-J221	44504701AA	WIRE, LEAD	TIN ANNEALING DIPPED COPPER WIRE, CU+SN+PB, 0.6t
TP1, TP2, TP3, TP4, CN23, CN24, CN25, CN26, CN27, CN28, TH102-1, TH102-2, CN101-1, CN101-2	46890101AA	CONNECTOR, G/T PIN	G/T, 1PIN, 2.36PAI, NI



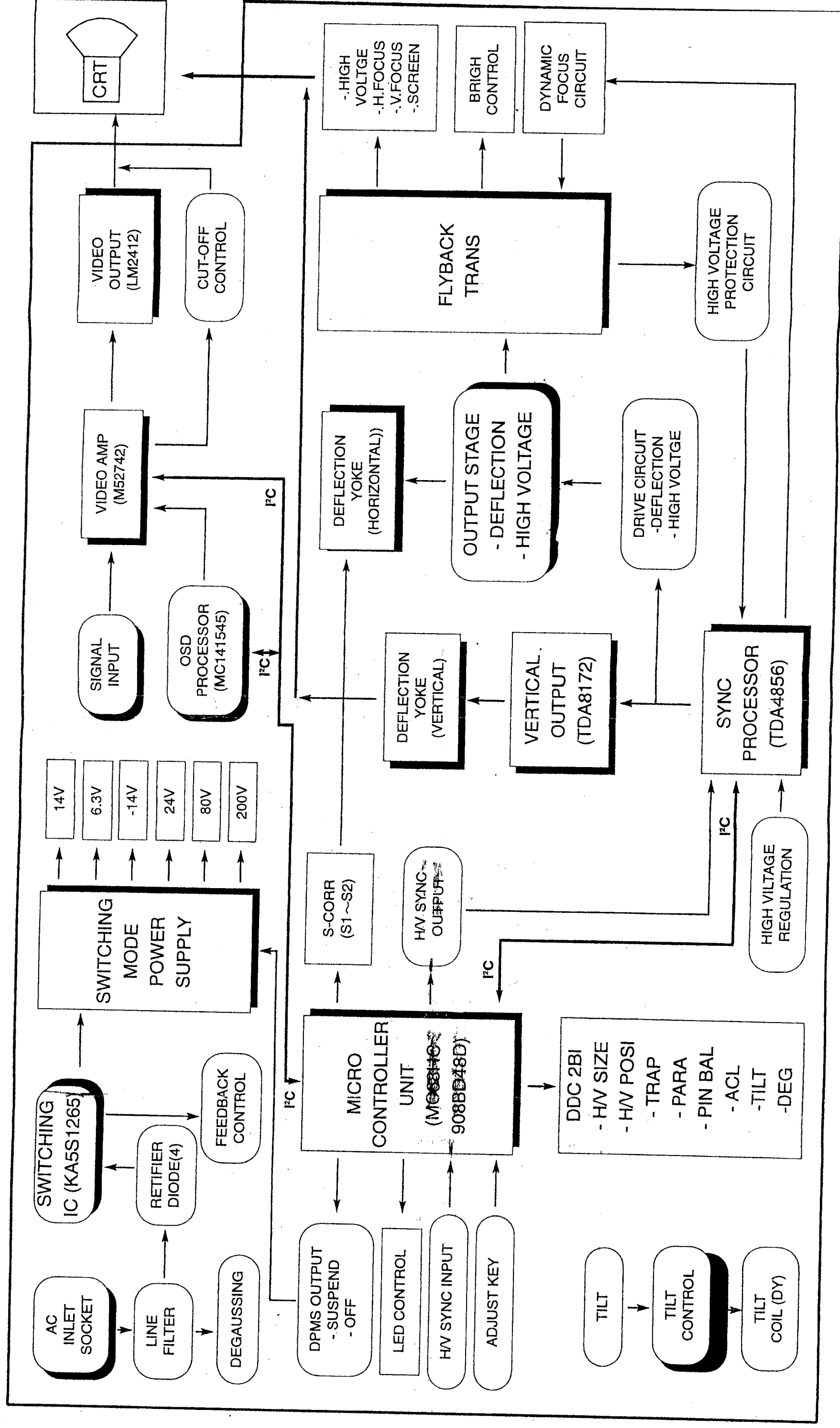
LOCATION NO.	PART NO.	TYPE	DESCRIPTION
CN401	4632110013ID	CON.SHROUNDED	13PIN,2.5mm,MALE,R/A, SMAW250-13
CN402	4623150002WD	CON.SHROUNDED HEADER	6PIN,2.0mm,MALE,R/A, SMAW200-06
C413	277501068CAH	CAP AL-ELECT.GP	10uF,50V,20%,-40/85°C,5.08mm,5*11,RT
C417,C424,C431,C440	277501073CAH	CAP,AL-ELECT.GP	100uF,16V,20%,-40/85°C,5.08mm,6.3*11,RT
C452	263101048AEH	CAP,DISC,CERAMIC,CK	0.1uF, 50V, F, +80/-20%, -25/85°C, 5.0mm, RT
C433,C449,C450,C451,C436	23560104B9CH	CAP METALZ-POLYESTER	0.1UF, 100V, 5%, -40/80°C, DMEU, 5mm, RT
C453	26370102PAEH	CAP,DISC,CERAMIC,EK	1000pF, 1KV, B, 10%, -25/85°C, 5.0mm, RT
C454	26370272QAEH	CAP,DISC,CERAMIC,EK	2700pF, 2KV, B, 10%, -25/85°C, 7.5mm, RT
C426	26318A06817D	CAP,DISC CERAMIC CC	680pF, 50V, B, 10%, -25/85°C, 5.0mm, RT
C428	271201075CHD	CAP,AL-ELECT.GP	100uF, 25V, 20%, -40/85°C, 5.0mm, 6.3*11, RT
C446,C447,C448	27120225BCHD	CAP,AL-ELECT.G.P	2.2uF,100V, ±20%,-40/85°C,5.08mm,5×11,RT
C414,C415	2631033089EH	CAP,DISC,CERAMIC,CC	33pF, 50V, CH, 5%, -25/85°C, 5.0mm, RT
C441,C442,C443,C445	26318A01037D	CAP,DISC,CERAMIC,CC	0.01uF, 50V, F, +80/-20%, -25/85°C, 5.0mm, RT
C420,C421,C455,C456,C457	26318A02217D	CAP,DISC,CERAMIC CC	220pF, 50V, B, 10%, -25/85°C, 5.0mm, RT
C401,C403,C405,C408,C410 C412,C416,C425,C430,C437, C444	26238R01041F	CAP,CERAMIC,MONO	0.1uF,50V,+80%/-20%,Z5U,AT
C418,C419	23110682B9TD	CAP,IND-POLYESTER	6800pF,100V, ±5%,-40/80°C,RT
C439	277501083CAH	CAP AL-ELECT G.P	1000uF,16V,20%,-40/85°C,5.08mm,10*20,RT
C411	271204773CHD	CAP,AL-ELECT,G,P	470uF,16V,20%,-40/85°C,5.0mm,10*12.5,RT
C432	27740476BCAH	CAP,AL-ELECT,GP	47uF,100V,20%,-40/105°C,5.08mm,10*16,RT
C438	277504763CAH	CAP AL-ELECT G.P	47uF,16V,20%,-40/85°C,5.08mm,5*11,RT
C402,C404,C406	277504758CAH	CAP AL-ELECT G.P	4.7uF,50V,20%,-40/85°C,5.08mm,5*11,RT
C110	27750337JCAH	CAP AL-ELECT G.P	Rev.01, 330uF,400V,20%,-40/85°C,30*40,RB
CN404,CN405,CN406	46890101AA	CONNECTOR,G/T PIN	G/T, 1PIN, 2.36PAI, NI
L406,L407,L408	3421260004TD	COIL,AXIAL,INDUCTOR	0.22uH, ±10%,AL03T,AT
L402,L403,L404,L409,L410	3421410001TD	COIL,BEAD,CORE	100 g,BFS3565A0LD8 / ATS3565L(90 g), AT
L401	3421260003TD	COIL,AXIAL,INDUCTOR	150uH, ±10%,AL03T,AT
L411	35390007AA	DIODE, RET	UF4004,1A,400V,50NS, FR, AT
SC401,SC402,SC403	38130008201D	SURGE ABSORBER	200V ±20%,WSP-201M,TAPING
SC404	38130009AAAD	SURGE ABSORBER	400V, ±20%,KSA-401M/WSP-401M/DSP-401, TAPING
SC701	38130001	CAP,SPARK-GAP	Rev.01, 1KV,S-23
Q312	30890003AA	FET,N	IRF740A,TO-220,125W,400V,10A,BULK
T702	3321120002GD	TRANS,FOCUS	920D,IND:2.10mH/550mH DC/RES:0.650 OHM/65.0 OHM/MAX 10PIN
T302	3321260009ED	TRANS, HDT	920D, IND:2.75mH/83.0uH/DC RES:0.60 OHM/0.12 OHM MAX 8PIN
T301	3321240001CD	TRANS,GATE(PWM DRIVE)	920D,IND 520uH ±10% DC/RES 2.5 OHM MAX 6PIN
L703	3421150020BD	COIL,CHOKE	Rev.01, MAX 19 **,IND 2.5uH ±10% DC/RES 0.020 OHM MAX
L304	3421150015TD	COIL,CHOKE	920D,IND 3.5mH ±10% DC/RES6.0 OHM MAX
L302	3421180011TD	COIL,H/LINEARITY	920D,IND:4.0uH ±20%,DC/RES:0.03 OHM MAX,6PIN
T103	3321110017QD	TRANS,SWITCHING (+SMART IC)	920D,IND:280uH ±8%, DC:0.125 g, 18PIN
T701	3321130012MD	TRANS,FBT	Re.02, 920D/eF,FQM19A002/FHA0009, H/V27.8+IN/V80VDC,15PIN
CN504	4623150001WD	CON,SHROUNDED HEADER	7PIN,2.0mm,MALE, SMW200-07
T101	3321250005AD	TRANS,LINE,FILTER	920D, IND 11.0mH,DC/RES 0.16 OHM,4PIN
X501	3111240000MD	QUARTZ CRYSTAL UNIT	ATS-49/U,24.000000MHz, 18pF
T102	3321110010AD	TRANS,SYNC (+SMART IC)	IND 250uH/250uH ±30%,4PIN,(900P,900PVI,710A.P)
TH101	38110006AAAD	PTC	14 g, ±20%,AC 220Vrms,10 g,PT11P63D140M290
RL101	4333000312AD	RELAY POWER	DY3M,DC12V,250VAC(5A)/30VDC(5A),DPST
CN302	4621150002WD	CON,OPEN HEADER	MALE,ST,3PIN,2.5mm,B3B-EH,WHITE,BULK
CN102	46148703AA	CONNECTOR,EMI FILTER	Rev.01, 1.2mH,115/250V AC,03ME30,DELTA
CN502,CN303TCO	4632150001WD	CONNECTOR, SHROUNDED HEADER	3PIN,2.5mm,MALE,ST,SMW250-03,BULK
	4821210015CD	SIGNAL CABLE	Rev.01, 1800 ±50mm, ATTACHED,COLOR:C7425,920D For E-2000

# Exploded View & Parts List

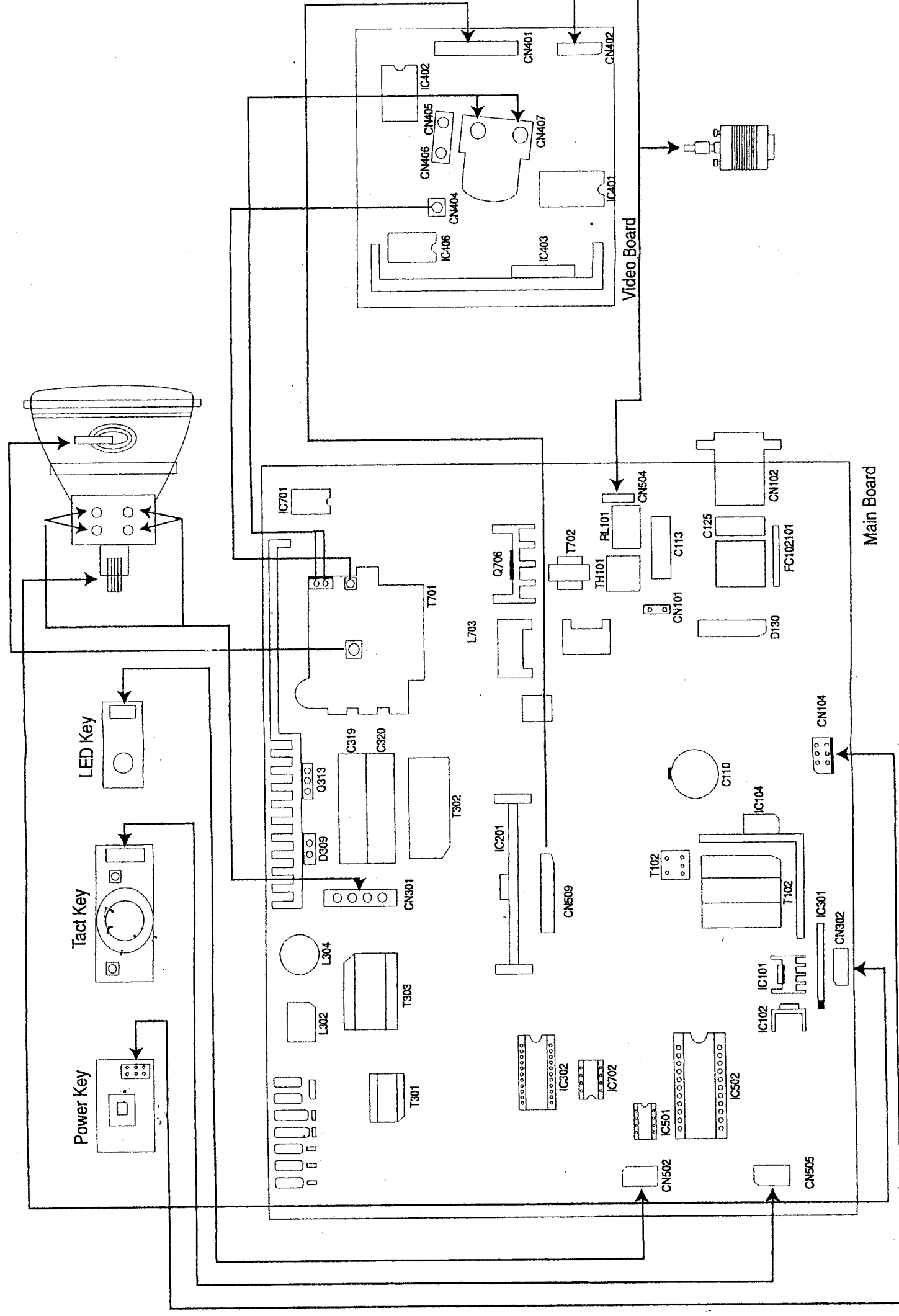


## 9. Block Diagram

### Block Diagram



# 10. Wiring diagram

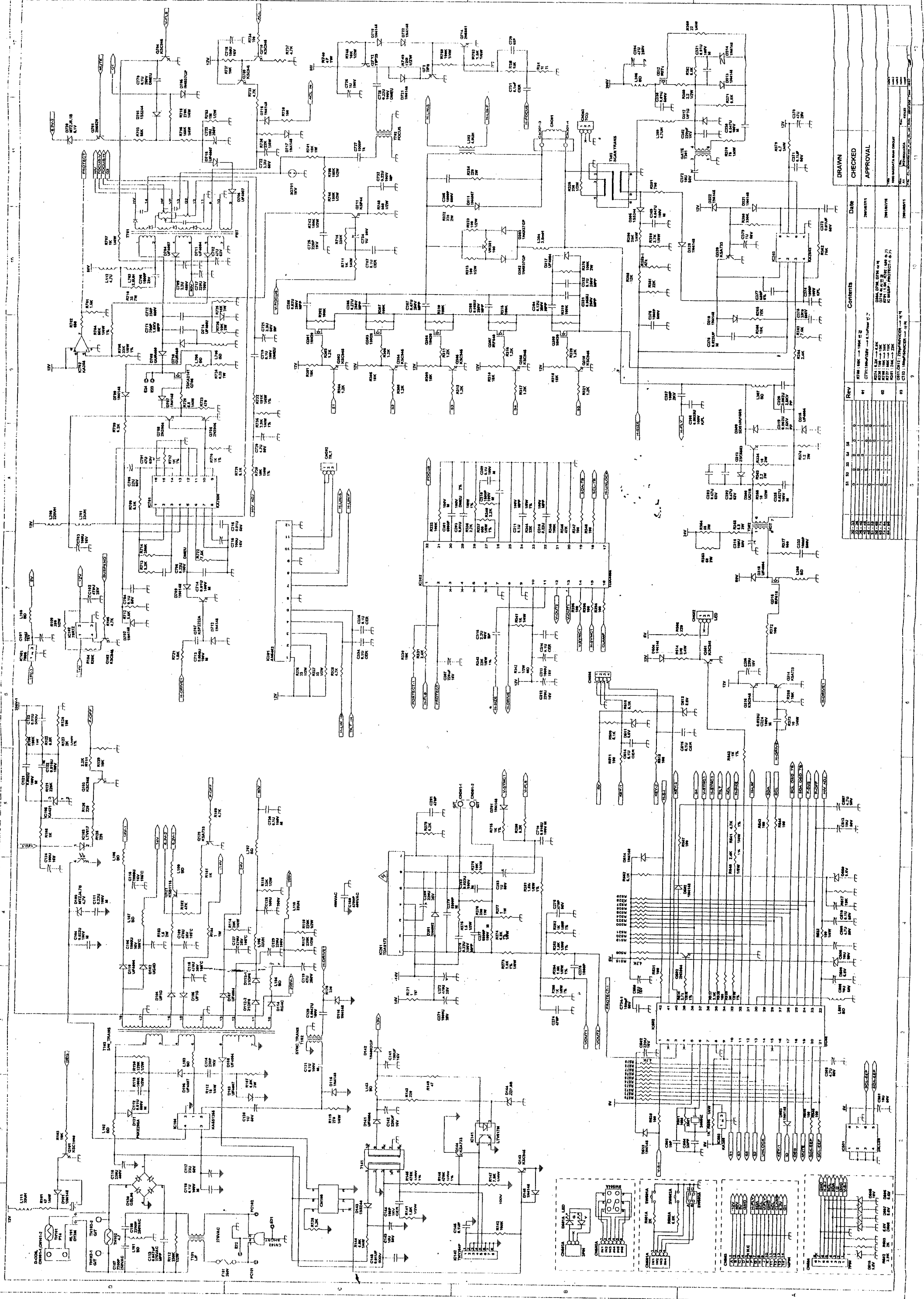


Exploded View & Parts List

NO.	PART NAME	CODE NO.	DESCRIPTION	QTY	REMARKS
1	BEZEL FRONT ASSY	6521690029AD	ABS-HB,SD-0150,C81253	1	
1-A	KNOB FUNCTION	6221990064AD	ABS-HB,SD-0150,G6771	1	
1-B	KNOB ORNAMENT L-R	6221990065AD	ABS-HB,SD-0150,G6771	1	
1-C	KNOB POWER	6221990066AD	ABS-HB,SD-0150,G6771	1	
1-D	SPRING POWER	75210001AA	SUS304, ϕ 0.5B	1	
1-E	BEZEL FRONT	6221690030AD	ABS-HB,SD-0150,C81253	1	
1-F	LENS LED	6221990067AD	PC(NATURAL)	1	
1-H	KNOB VOLUME	6221990063AD	ABS-HB,SD-0150,G6771	1	
2	PCB CONTROL	-		1	
3	PCB CONTROL	-		1	
4	CDT 19"	5419000832TD		1	
5	CRT CHASSIS ASSY	6521690005AD	SECC 1.0T	1	
5-A	SPRING GROUND A	6321690005AD	BSP 0.15T	2	
5-B	SPRING GROUND B	6321690006AD	BSP 0.15T	6	
5-C	CHASSIS CRT BOTTOM	6321690004AD	SECC 1.0T	1	
5-D	CHASSIS CRT TOP	6321690003AD	SECC 1.0T	1	
5-E	CLAMP D-COIL	65214207AA	NYLON66	2	
5-F	WIRE SADDLE	65214205AA	NYLON66	2	
6	INSULATION SHHT	6221690034AD	PET,0.35T		
7	HARNESS CRT GND	4921220015KD		1	
	CABLE ASSY				
8	DECAUSING COIL	3421310016BD		1	
9	T/T SCREW	6766310010AD	B-TYPE,5 X 28,HEXAGON GEAR WASHER( ϕ 18)	4	
10	T/T SCREW	67613002AA	BHB,+, 4X15	2	
11	T/T SCREW	67613002AA	BHB,+, 4X15	5	
12	PCB MAIN	3921110032AD		1	
13	T/T SCREW	6769310003AD	BHB,+, 3X8(WASHER)	5	
14	SUB ASSY HEAT SINK	0821690006AA	FBT	1	
15-A	SPRING	75410001AA	SUS304 2.0 X 3.8 X 0.5T	2	
15-B	FBT HEAT SINK	6421690001AD	AL 2.5T	1	
15-C	BRACKET HEAT SINK (S)	6321690011AD	SECC 1.2T	1	
16	T/T SCREW	67613002AA	BHB,+, 4X15	1	
17	WARNING LABEL (E)	9221130003AD	ART-PAPER 80G	1	
18	RING INSULATOR	65214203AA	N66	1	
19	CHASSIS MAIN ASSY	6521690004AD		1	
19-A	CHASSIS BOTTOM	6321690002AD	SECC 1.0T	1	
19-B	T/T SCREW	67613002AA	BHB,+, 4X15	7	
19-C	CHASSIS MAIN	6321690001AD	SECC 1.0T	1	

NO.	PART NAME	CODE NO.	DESCRIPTION	QTY	REMARKS
20	PFC BRACKET	6321990003AD	SECC,1.0T	1	
21	SMPS HEAT SINK	6421870003AD	AL 3T	1	
22	HEAT/SINK A	6421220101	AL 3T	1	
23	HEAT/SINK S	6423370008AD	AL 3.0T,EXTRUSION	1	
24	T/T SCREW	67213001AA	FHB,3X8	2	
25	SOCKET COVER ASSY	6521290018AD		1	
25-A	GT PIN	4652150006WD		3	
23-B	SHIELD COVER TOP	6421470001AD	AL 1.0T	1	
25-C	PCB VIDEO	-		1	
25-D	SHIELD COVER	6321120001AD	SPT 0.3T	1	
25-E	SOCKET GROUND	63214214AA	PBSS 0.15T	1	
26	SHIELD COVER ASSY	6521690006AD		1	
26-A	ANODE CAP	6221690010AD	PP 0.5T	1	
26-B	SHIELD COVER R	6321690009AD	AL 0.3T	1	
26-C	SHIELD COVER L	6321690008AD	AL 0.3T	1	
26-D	SHIELD COVER TOP	6321290007AD	AL 0.3T	1	
27	T/T SCREW	67213001AA	FHB,3X8	1	
28	REAR HOUSING	6221690035AD	ABS-HB,SD-0150,C81253	1	
29	PRODUCT LABEL	922169320013	POLYESTER FILM	1	
30	T/T SCREW	67613002AA	BHB,+, 4X15	2	
31	STAND ASSY	6521690032AD	ABS-HB,SD-0150,C81253	1	
31-A	FOOT RUBBER	62214221AA	PVC RUBBER	3	
31-B	STAND	6221690032AD	ABS-HB,SD-0150,C81253	1	

[illegible]

[illegible]